January 1959
JPH
VOLUME 49 NUMBER 1

AMERICAN

Journal of Public Health

AND THE
NATION'S HEALTH

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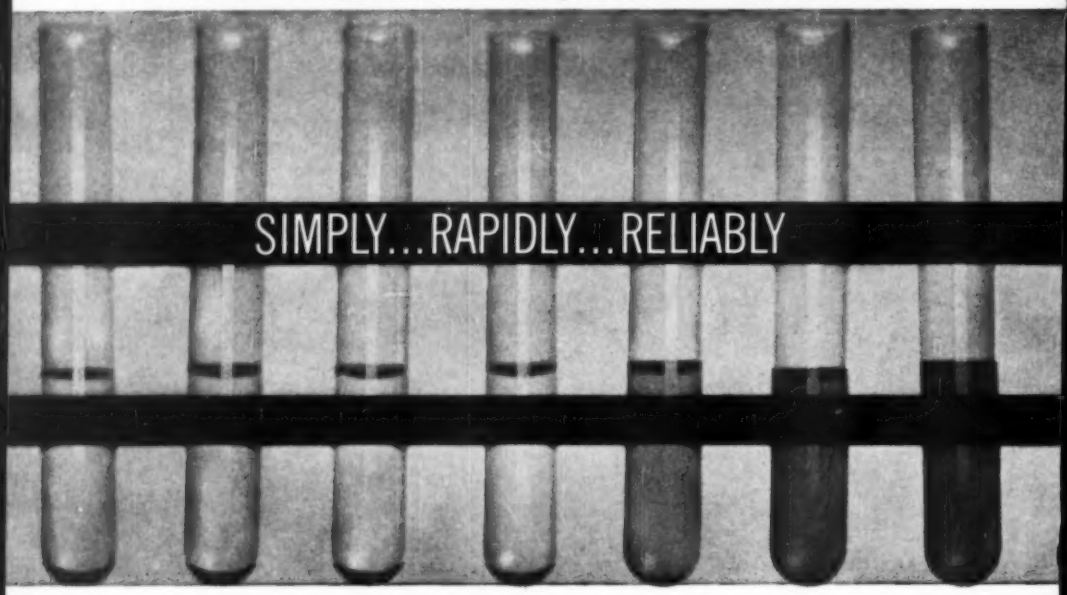

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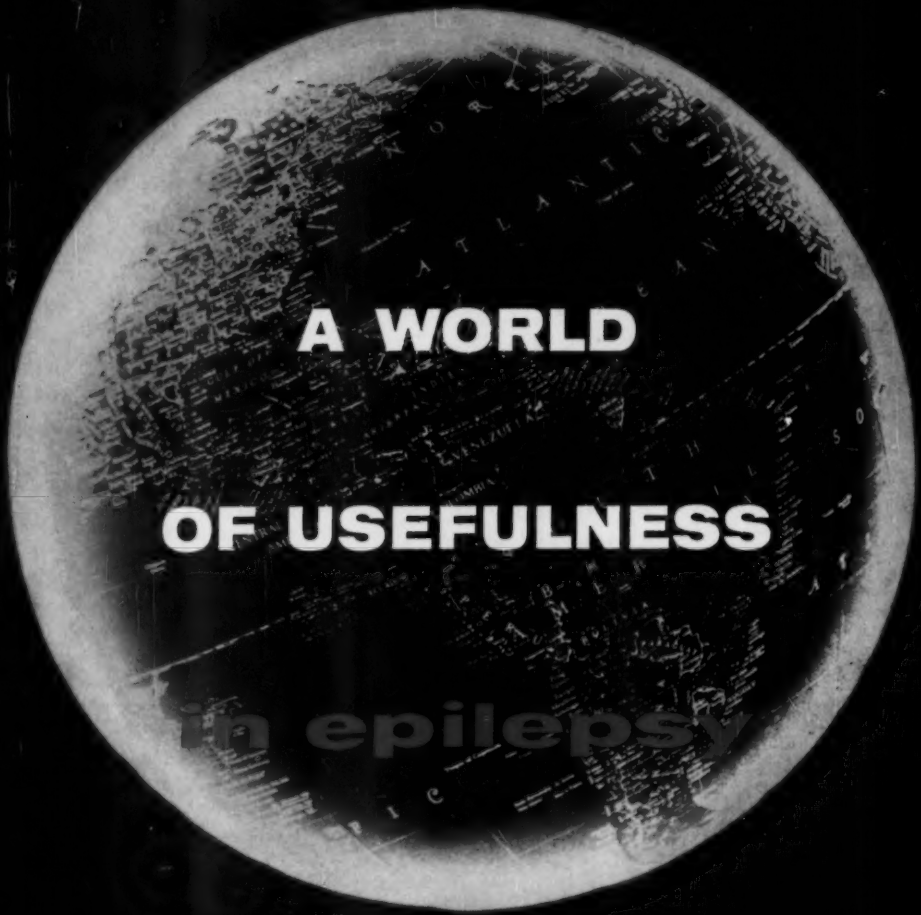
The American Journal of Public Health and the Nation's Health is published by the American Public Health Association, Inc., at 883 Broadway, Albany 1, N. Y. Executive office 1790 Broadway, New York 19, N. Y. Subscription price $12.00 per year for United States, elsewhere $13.00 to cover postage and handling. Single copies $1.25 postpaid. Entered as second-class matter at the Post Office at Albany, N. Y., September 17, 1932, under the Act of March 3, 1879. Published monthly. Copyright 1959, by the American Public Health Association, Inc. The American Journal of Public Health is indexed in the Industrial Arts Index and, in part, in the Quarterly Cumulative Index Medicus, Biological Abstracts, Chemical Abstracts, Engineering Index, and Public Affairs Information Service.

Address all correspondence to the Managing Editor, 1790 Broadway, New York 19, N. Y.



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1. Proceedings National Conference on Hospital-Acquired Staphylococcal Disease, September, 1958, pages 3-10.

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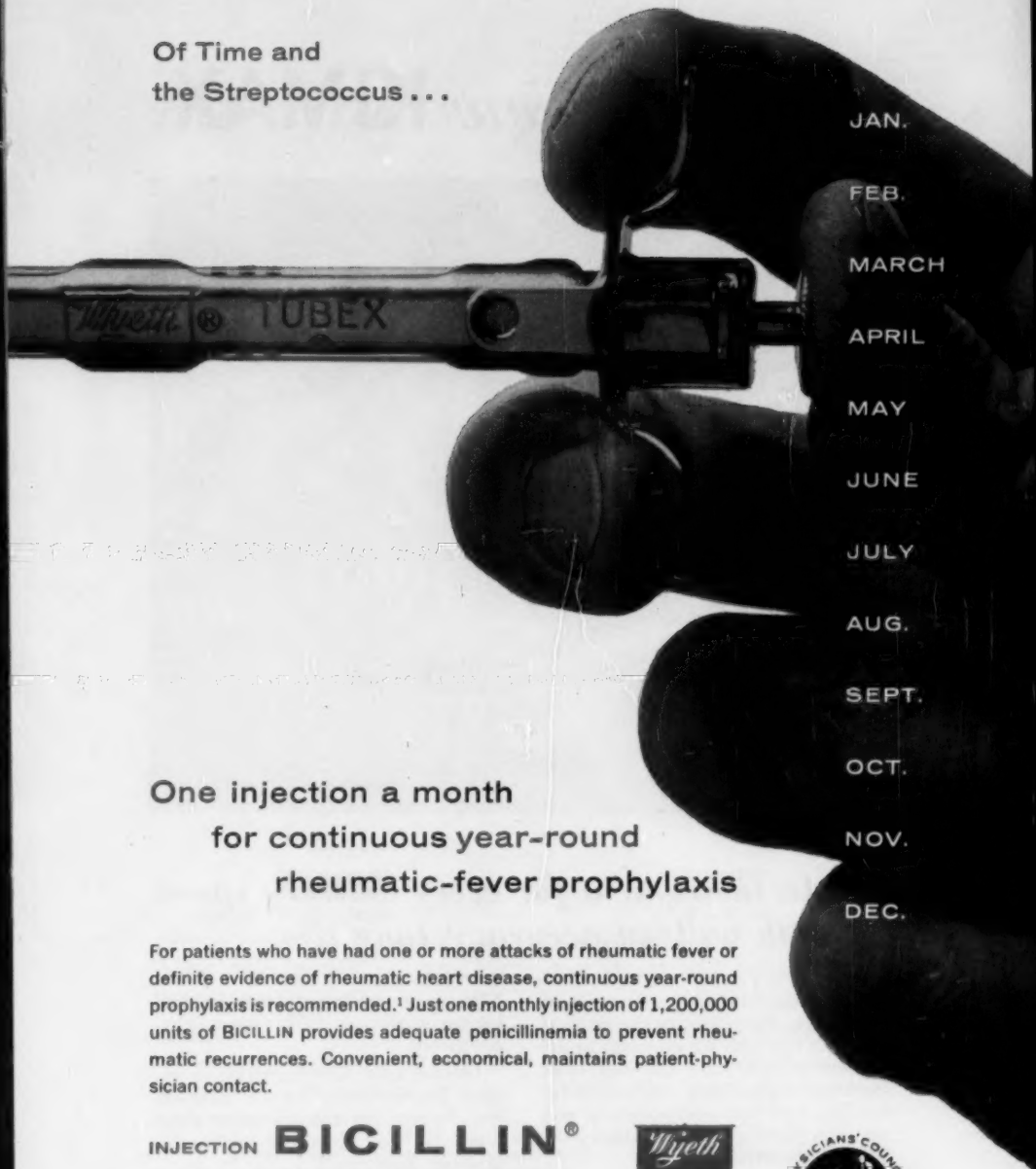

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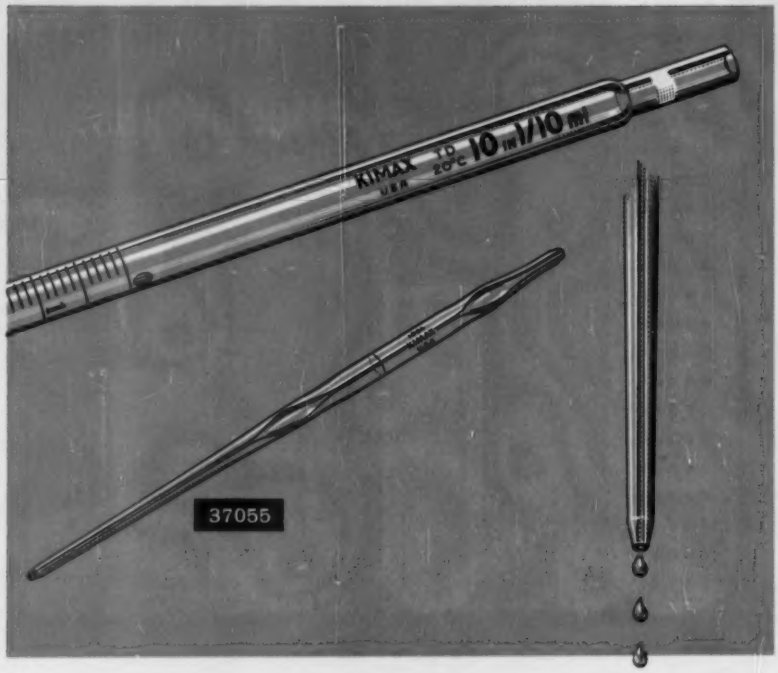

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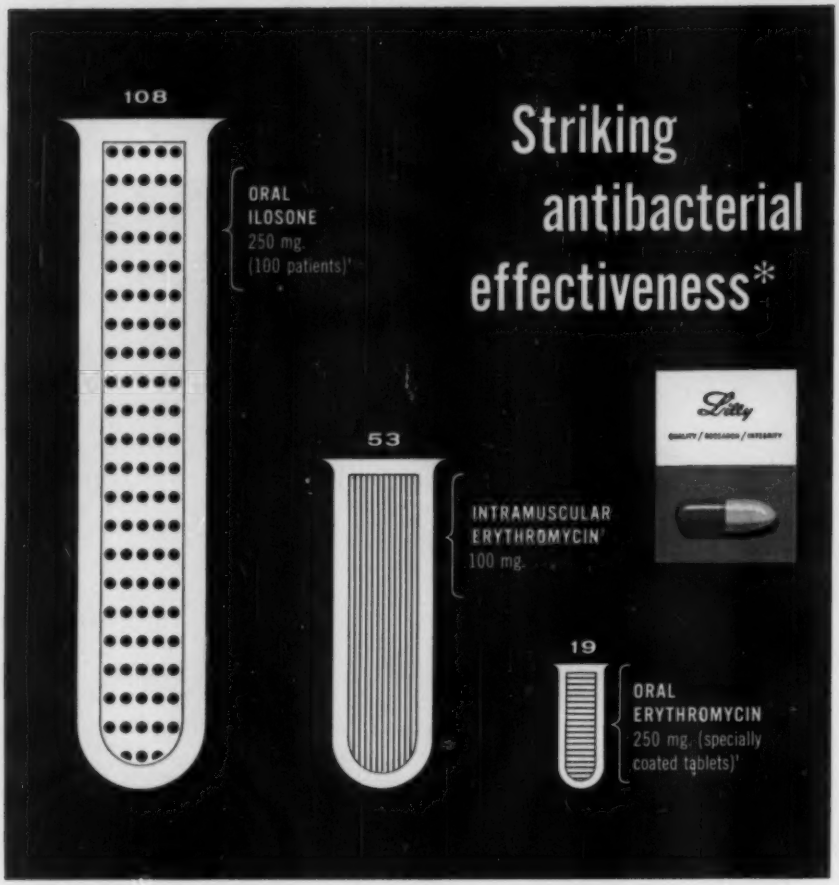

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1. Griffith, R. S., *et al.*: Antibiotic Med. & Clin. Therapy, *5*:609 (October), 1958. Note: Peak levels with the oral erythromycin tablets (thirty-three dilutions) were not observed until four hours after administration. 2. Data from Griffith, R. S.: Antibiotics Annual, p. 269, 1954-1955.

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2. Swartzwelder, J. C., et al.: A.M.A. Arch. Int. Med. 101:658-61, 1958.
3. Frye, W. W., et al.: Am. J. Trop. Med. Hyg. 6:890-93, 1957.
4. Swartzwelder, J. C., et al.: J.A.M.A. 165:2063-67, 1957.

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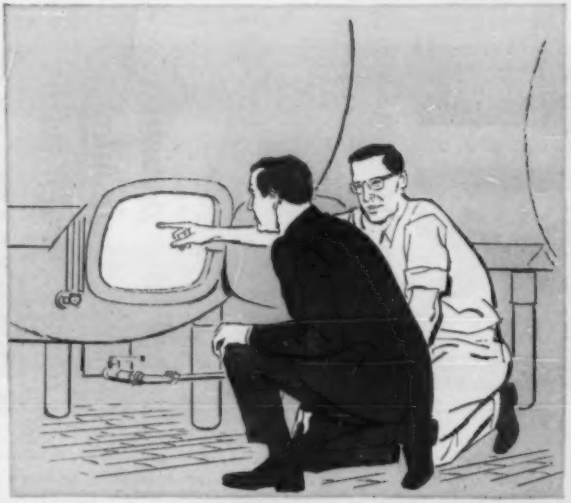

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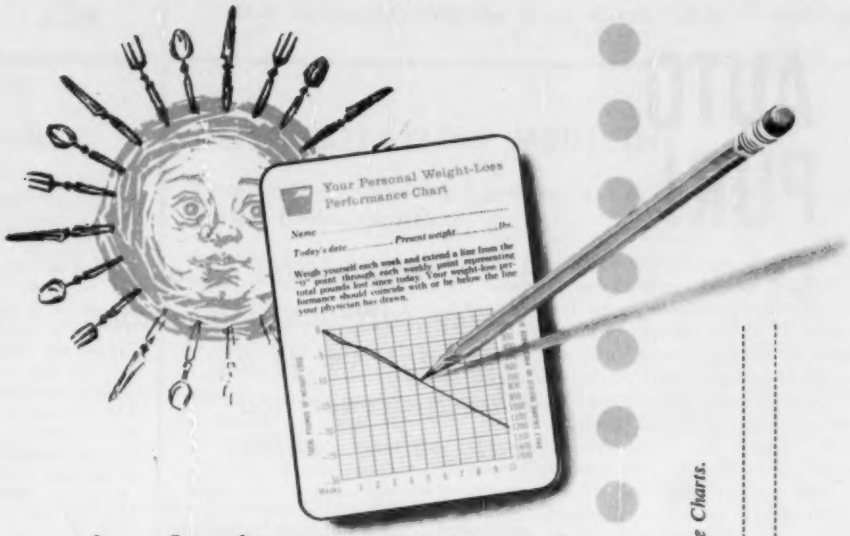
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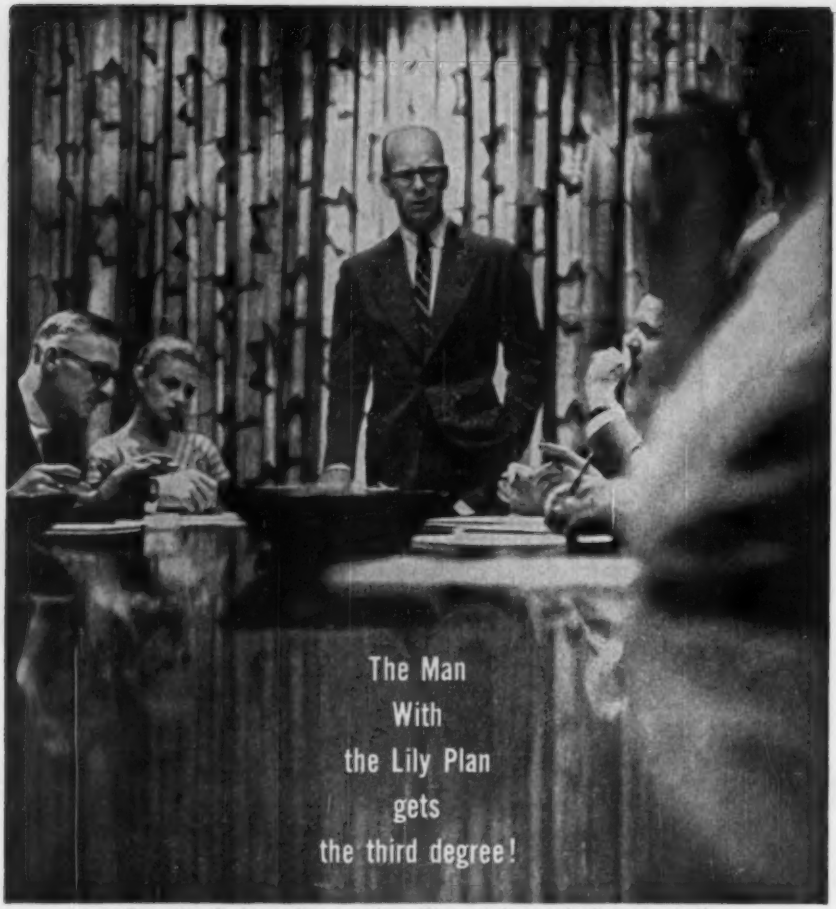

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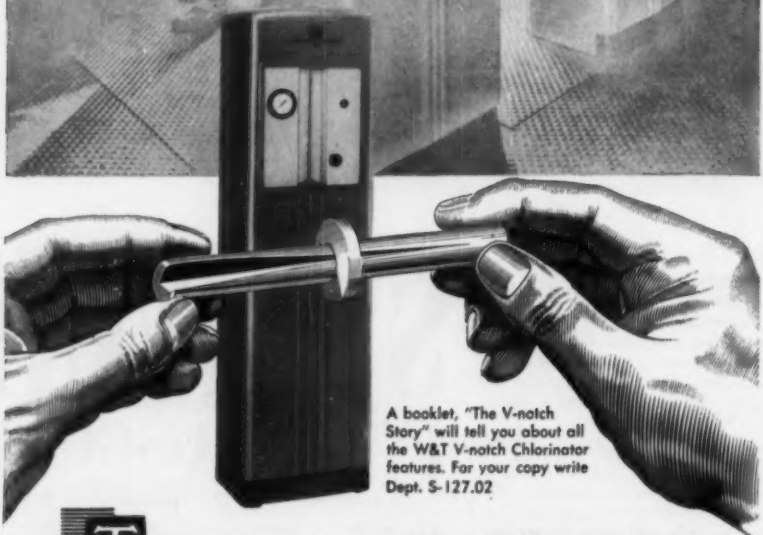

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Dramatic increase in the exposure of human beings to radiation and increasing information regarding the possible long-term effects of radiation mean that health agencies and health workers have a responsibility to take leadership in dealing with the problem. This review of potential hazards and activities provides a needed perspective.

RADIATION HAZARDS

Clinton C. Powell, M.D.

UNTIL LESS THAN twenty years ago, the majority of radiation sources were under the cognizance of practitioners of the healing arts, with a relatively few sources consisting almost entirely of radiation-producing machines or naturally radioactive materials in the hands of others. With the advent of the nuclear reactor have come abundant supplies of relatively inexpensive, artificially created radioactive materials for science, medicine, and industry. Reactors themselves and fuel element processing plants associated with their operation also represent potential sources of environmental radioactive contamination which will be of concern to health agencies. Superimposed on these sources are an increasing number of radiation-producing machines in industry. Ever larger numbers of individuals have become actually or potentially exposed as the peaceful uses of radiation sources have expanded dramatically.

Simultaneously, rapid and dramatic strides have been made in the field of diagnostic roentgenology. More powerful and versatile x-ray machines have proved to be a source of invaluable and otherwise unobtainable information which is in many cases life saving. Both the number of persons exposed and the exposure during certain studies have increased significantly. For example, the condition of a patient who might well have been considered to be afflicted with an incurable congenital cardiac lesion a decade or two ago is now often amenable to corrective surgery. To make surgery feasible and to minimize the surgical risk, the patient may receive radiation exposures several times in the course of cardiac fluoroscopy, one or more times during cardiac catheteriza-

tion, and again during angiocardiographic studies, in addition to being exposed during x-ray examinations considered "routine." Angiocardiography may involve as many as 12 x-ray films per second for a period of several seconds. Even this exposure, however, may be appreciably less than that received during fluoroscopy. Also, this same patient may now be expected to survive and successfully reproduce. The significance of this radiation exposure for future generations will be discussed in the following.

While these sources have been expanding, major world powers have been testing nuclear weapons, thus adding to the radiation exposure of the world's population, even if only by a small amount.

The data are not yet available from which one can reach scientifically accurate conclusions regarding the total radiation exposure of the population of the United States or that of any major population group. Although the interest of health agencies is not restricted to people who are likely to become parents, the best available data are found with this group. Much of the current public interest no doubt results from the publication in 1956 by the National Academy of Sciences of a summary report[1] from a Committee on Genetics set up to examine the genetically significant radiation exposure of the United States population and to evaluate its significance. At that time, this committee reported that the largest amount of radiation exposure to the population resulted from so-called background radiation arising from cosmic rays and naturally radioactive materials within the individual and his environment. Only slightly less was the estimated exposure from the use of radiation in the healing arts, while the estimated gonadal exposure from radioactive fall-out and from the use of radiation sources in industry was of very much smaller magnitude.

Although minor revisions have been made in these data as a result of further estimates,[2] it appears certain that the average 30-year gonadal radiation exposure to the United States population from the use of radiation sources in the healing arts is far and away the largest source of such man-made exposure and is approximately equal in magnitude to the exposure from natural background. Reference to specific numbers has been avoided because of the large variables involved. Those interested in pursuing this problem in greater detail will find additional information in the references cited. Among more important variables involved in estimating the genetically significant exposure are: distribution of radiation exposure among the population, with particular reference to the likelihood of reproduction of those undergoing radiographic examinations as compared to the general population; the proportion of all examinations which are among the relatively small number of studies involving large gonadal exposures; and the extent to which diagnosticians use all available technics to minimize the exposure in any given examination. The principle, however, remains sound: Major sources of man-made radiation exposure result from lifesaving diagnostic procedures which cannot be drastically curtailed without significant loss of recent medical advances. However, as will be discussed, the exposure per examination may be subject to improvement.

In order to determine the point at which the probability of benefit from a given examination outweighs the potential harm, it is necessary carefully to evaluate both the benefit and the hazard. In the light of current knowledge, strict scientific evaluation is impossible. The decision in each case must be reached by the responsible practitioner of the healing arts in the light of his knowledge of the specific circumstances involved. It is of course impossible to predict in advance precisely what benefit will be

derived from any single examination. Likewise the hazard is impossible to assess with the desired precision. These decisions, then, become judgmental in nature. Such judgment should be exercised with a full knowledge of the available information, particularly of a quantitative nature, regarding radiation effects on people. In many cases it is necessary to rely upon extrapolation from animal data. While assessment of human and animal data together will not, in most cases, permit precise and accurate calculations of the risk involved, they will provide some perspective. Thus, while we may not know "which base we are on," we will probably be able to tell "which ball park we are in."

Acute Radiation Effects

Acute radiation effects can be expected to be of concern to public health authorities, with few exceptions, only in the event of a major contaminating incident. Such an incident might well be expected to result from nuclear warfare and is therefore of concern to health agencies maintaining a civil defense responsibility. In addition, although admittedly a remote possibility, the potentiality of a major nuclear reactor incident requires thorough planning.

An acute radiation exposure of sufficient magnitude involving all or a major portion of the human body can, and will, result in death, usually within a few days or weeks. Lesser exposures may produce milder symptoms with apparently complete recovery, but the potential of late sequelae must be considered in the light of delayed radiation effects discussed in the following. Radiation, particularly that with a relatively poor penetrating power, can result in serious skin burns which may take weeks to develop and months to heal, with permanent scarring or ulceration.[3] Space does not permit a detailed discussion of acute radiation effects. It is important, however, to maintain a clear distinction between this type of biological damage and the delayed effects of low-level radiation with which health agencies must be concerned on a day-to-day basis.

Delayed Radiation Effects

Although acute radiation effects may be delayed in the sense that they will take hours, days, or even weeks to develop, we are thinking now of biological damage which may become manifest only years after the initial exposure. As will be discussed, such biological damage will usually be indistinguishable by its nature from diseases and impairments of man which are already present in the population from other causes. It will thus defy detection by anything short of the most careful statistical and epidemiological studies.

Genetic Effects

Of all the effects of delayed radiation, genetic effects have no doubt received by far the widest attention. Essentially no human data are available in this area. Although single cases of normal reproduction following fairly heavy radiation exposure have been reported, they should be considered of little significance beyond indicating that gross congenital abnormalities are not an inevitable consequence of sublethal human exposure. In the Japanese populations of Hiroshima and Nagasaki, the magnitude of exposures, duration of time since exposure, numbers of individuals involved, and other factors currently permit no firm conclusions. Animal data, however, indicate beyond reasonable doubt that the genetic impact is proportional to the radiation exposure received prior to conception, irrespective of the time-dose relationship, at least within the limits of dose rate of primary concern to public health agencies. Additionally, it would appear that radiation-induced

genetic effects do not differ qualitatively from those normally present in the population. In a plant or animal population, the overwhelming number of such genetic changes will be harmful, rather than beneficial. It is to be expected that in the human, a presumably more highly developed species, the proportion of harmful to beneficial effects would be even greater than in lower forms of life. Thus, although a small number of beneficial effects might result, they would certainly be more than outweighed by the harmful changes. In the human race during the past few decades, we have become increasingly able to counteract the process of natural selection. Thus, those additional genetic changes which are produced may be expected to have increasing significance.

On the other hand, it would appear from all available data that we can be quite certain that large numbers of grossly abnormal or monstrous offspring will not be produced by exposure of the population to the dose levels under consideration here. For example, it has been estimated that the current average man-made population radiation exposure would have to be increased about tenfold before the current rate of "spontaneous" genetic defects would be doubled.[3] The concern of many geneticists is therefore with the more subtle genetic changes not immediately observable, which are manifest by a weakening of the virility of the strain. That this fear is not entirely theoretical is indicated by recent work[4] which has shown that even the first-generation offspring (where the effect would be expected to be appreciably less than in later generations) show a nonspecific decrease in longevity as the result of irradiation of the male parents.

It should be remembered that genetic effects from radiation are a probability phenomenon. As the total exposure increases, the probability of genetic damage increases in direct proportion to the dose, probably with no threshold for these effects. It is therefore the total dose to the reproductive organs of the genetically significant population that is important, essentially without regard to the distribution of the dose among the individuals within this population. For example, the total effect of 10 roentgens to the reproductive organs of each of 100 people and of one roentgen to each of 1,000 people would be the same, given equal likelihood of reproduction.

Neoplasms

Although readily and easily demonstrable in experimental animals, an increased incidence of neoplasms as a result of radiation exposure is also supported by a significant amount of data on human beings. The increased incidence of primary bone tumors as a result of the deposition of radium and thorium (both of which are naturally radioactive materials) in the bones of radium dial painters is so well known as not to warrant further discussion. Also, evidence for an increased incidence of leukemia among radiologists, as compared to the general population, or to other physicians, has appeared in several reports[5, 6] and seems indisputable. Additional studies have indicated an increased incidence in thyroid carcinoma in children irradiated in infancy with relatively small therapeutic doses of radiation.[7-9] An increased incidence of leukemia has been reported in individuals receiving radiotherapy for rheumatoid spondylitis,[10] and in the survivors of the atomic bombings of Hiroshima and Nagasaki.[11, 12] In this latter situation, although specific doses are not know with precision, the incidence correlates extremely well with the distance of the population from the point of detonation of the weapon. A recent report from England also indicates that there is a marked increase in the incidence of leukemia and other types of neoplasms in children during the first ten years

of life when their mothers received diagnostic x-ray examinations during pregnancy.[13] This latter report is of particular interest since it indicates that radiation exposures previously thought to be well below the level necessary for demonstrable effect may be accompanied by a real and significant hazard.

A recent attempt to correlate the data from several of these reports and reach a conclusion regarding the quantitative aspects of leukemia incidence and radiation exposure[14] will undoubtedly remain controversial until more conclusive data are obtained. We still do not have available information on which to base a firm decision regarding the presence or absence of a "threshold" for radiation effects as manifest by an increased incidence of neoplasms. Thus, while the theoretical and experimental information would indicate the probability of no threshold whatever for genetic effects, the presence or absence of a threshold for the production of neoplasms will undoubtedly remain an issue of major controversy for some time to come. In the interim, it would seem prudent for health agencies to operate on the assumption that there may not be a threshold for this latter type of effect.

Life Span Shortening

The presence of early aging accompanied by a nonspecific shortening of life span as a consequence of radiation exposure has been established beyond reasonable doubt in animal species.[15] Death results from the same causes in approximately the same relative proportions as without radiation exposure. The implications in terms of public health programs related not only to radiological health but also to chronic diseases and aging are clear. Our human data here are highly controversial. A report of decreased life span of radiologists[16] has more recently been disputed[17] on a basis of biostatistics and it is unlikely that we will have useful human data of an noncontroversial nature in the near future. On the other hand, faced by readily available animal data regarding this phenomenon, one can hardly question its existence. Its magnitude is another matter. It now appears likely that a reasonable number of diagnostic x-ray examinations, or radiation exposures below the maximum permissible exposure limits currently recommended by the National Committee on Radiation Protection,[18] would not shorten life more than many other well-known and apparently accepted hazards. Here, again, the question as to whether or not a threshold exists for this radiation effect is far from settled. The available animal or human data do not permit a firm conclusion in this regard, but it would seem prudent for health agencies to adopt the working assumption that no threshold exists, particularly in view of the probable irreversibility of this effect.

Perspective

After this recitation of the possible deleterious effects of radiation, it becomes necessary to attempt to evaluate their practical significance. The author believes that the data available permit one to use the working assumption that there is no radiation exposure which is completely safe. It is equally important, however, to recognize that the best estimates of radiation effects would imply that the total risk involved in any given exposure of the magnitude usually involved in diagnostic x-ray studies—performed under proper conditions—is sufficiently small that if a real and significant benefit is expected, the hazard should not be a deterrent. Thus, one should not be stampeded into abandoning such a useful tool as diagnostic x-ray examinations.

At the same time, it is obviously essential to keep the radiation exposure

as low as is feasible, consistent with the desired result. In establishing its recommendations regarding maximum permissible radiation exposures, the National Committee on Radiation Protection has pointed out that these are not necessarily completely safe limits, but rather levels which should carry an acceptable risk.[10] From the standpoint of the health agencies, it must be constantly remembered that what constitutes "acceptable risk" depends upon the nature of the hazard. Thus, public reaction to a given risk from radiation exposure might well be quite different from public reaction to the same risk of injury or death by motor vehicles or by falling in a bathtub.

Radiation Protection in the Healing Arts

It does not seem likely that major reductions in the number of radiographic examinations can be accomplished without sacrificing a disproportionate benefit. Even though a majority of radiographic examinations may not yield any positive findings of significance, this does not mean that they were unnecessary. In certain cases it has, however, proved feasible to reexamine procedures, particularly routine orders, to eliminate needless duplication. Improved technic is a much more fruitful area and one which can produce the desired results in terms of reduction of radiation exposure while at the same time actually increasing the diagnostic yield.

The most important single factor in reducing radiation exposure to the population is adequate and proper limitation of the size of the primary beam. X-rays from the direct beam which strike the body outside the area to be visualized on the film not only create needless exposure but also decrease the quality of the examination. The direct beam should therefore be strictly limited by the use of cones or diaphragms to an area no larger than that which is to be visualized on the film or the fluoroscopic screen. In practice, a chest x-ray machine without a cone may subject the patient to radiation exposure literally from the top of the head to the bottom of the feet, an obviously undesirable and unnecessary situation. The importance of proper diaphragming or coning cannot be overemphasized in the diagnostic examination of children, where at least the reproductive organs and often the whole body may easily be involved in the radiation field unless proper safeguards are taken.

The provision of filtration in the radiation beam will absorb the soft radiation which does not penetrate the body sufficiently to be of diagnostic value. This will result in a significantly reduced exposure of the part being examined and will yield a film of superior diagnostic quality. With adults, two or three millimeters of aluminum filtration in the primary beam will often not even require adjustment of the radiographic technic, yet it will substantially reduce the patient exposure. Lesser amounts of filtration may occasionally be needed on thin parts of the body or on children.

There are, in addition, a series of more technical details, such as optimum kilovoltage, faster films and developers, extended processing times, and the like, which can contribute materially toward reducing patient x-ray exposure. Needless to say, a most important factor may be to assure that films of satisfactory quality are obtained with as few repeat examinations as possible. In fluoroscopy, a very significant contributor to radiation exposure, proper dark adaptation and low tube current are vital.

When all the currently available factors are considered together, it is often possible to reduce the radiation exposure on a given examination to only one or two per cent of the previous exposure level. Here then is an obviously fruitful area of activity for those interested in maintaining radiation exposure at the minimum feasible level.

The use of diagnostic x-rays in mass case-finding technics presents certain peculiar problems, since the individuals being examined are usually in apparently good health in contradistinction to many of the individuals examined by practitioners of the healing arts. In order to clarify some of these problems, the Public Health Service[19] and the American Trudeau Society[20] have recently issued independent statements concerning this problem. These statements are mutually compatible and enjoy a common basic philosophy. They are considered to be required reading for all those involved in mass screening programs. The basic philosophy appears to the author to be as follows:

If a given case-finding program is worth while as a public health program in terms of the true benefit derived, the radiation hazard in mass screening films is not sufficiently great to require that the program be stopped. On the other hand, the radiation hazard is sufficiently great that all such programs should be critically evaluated, and, in addition, immediate steps should be taken to minimize the radiation exposure involved in each examination.

Public Health Programs

To outline completely even the basic elements of a public health agency's radiological health program will not be attempted here. Certain elements, however, are of such significance that they should not be overlooked in establishing such a program.

Obviously, a proper assessment of the public health significance of the radiation exposure to any given population depends upon knowledge in some detail of the degree of exposure and the sources from whence it comes. An important element in such an assessment may well be a requirement for registration (in contradistinction to licensing) of all sources within the jurisdiction in order that the health agency have knowledge of them.

It should not be implied from the discussions concerning radiation exposures in the healing arts that other sources of exposure such as radiation-producing machines or radioactive materials in industry and scientific research should be ignored. However, since the use of radiation in the healing arts can be expected to account for by far the largest amount of exposure to the population from man-made sources, and since it is often susceptible to reduction without any sacrifice in benefit, cooperation with the practitioners of the healing arts by providing monitoring services, technical assistance on protection problems, and radiation surveys may yield the greatest benefit in the shortest period of time, particularly during initial program phases. Additionally, this type of activity can provide valuable experience to health agency personnel in working with radiation sources and assessing their significance, thus increasing the pool of technically qualified manpower which will be available as other man-made sources increase in quantity.

Universal population radiation exposure record-keeping has been seriously proposed by many groups,[1, 21] The impracticability of this suggestion, at least on a population-wide basis, in contradistinction to appropriate sampling methods, has been clearly discussed in the report to the United Nations by the International Commissions on Radiological Protection and on Units and Measurements.[22]

Legislation and Regulations

Although the general authority of health agencies regarding the protection of the public health may often provide them with the basis for a radiological health program, many jurisdictions have found more specific legislation to be desirable, whether to clarify their authority

or as an appropriation authorization. Several jurisdictions have found that even the most elementary basic enabling legislation has been adequate, at least for their initial needs. At the moment there are several examples of model or sample legislation available. Among the first was that of the National Committee on Radiation Protection.[18] Quite recently a task force of the Association of State and Territorial Health Officers and the American Public Health Association has compiled sample enabling legislation.[19] This latter compilation does not spell out detailed regulations but was intended to provide the necessary legislative base and is available in two forms, with or without an advisory commission, to be adapted as needed locally. The Council of State Governments has also proposed model legislation in the field of atomic energy. This model legislation relates to both the development and the related health and safety problems of certain specific radiation sources. It should not be considered a substitute for appropriate health agency legislation covering all radiation sources.

Summary and Conclusions

Although man has been exposed to radiation since his creation, the past few decades, and especially the past fifteen years, have seen the need for awakened interest and implementation of program activities on the part of health agencies. Not only are the number, variety, location, nature, and use of radiation sources increasing dramatically, but newer scientific knowledge indicates that low-level radiation exposures previously thought safe may not be without risk. The health agencies bear a responsibility to evaluate sources of radiation exposure and their health effects and to take leadership in those activities needed to assure that the health of the public is not adversely affected out of proportion to the benefits which can be derived from newer and increased uses of ionizing radiation sources. Potential hazards, possible health agency activities, and the need for perspective in dealing with this increasing problem are emphasized.

REFERENCES

1. Biological Effects of Atomic Radiation. Summary Reports. Washington, D. C.: National Academy of Sciences, National Research Council, 1956.
2. Glass, B. The Genetic Hazards of Nuclear Radiation. Science 126:241 (Aug. 9), 1957.
3. Cronkite, E. P.; Bond, V. P.; and Dunham, C. L. Some Effects of Ionizing Radiation on Human Beings. AEC Document TID 5358. Washington, D. C.: U. S. Atomic Energy Commission, 1956.
4. Russell, W. L. Shortening of Life in the Offspring of Male Mice Exposed to Neutron Radiation from an Atomic Bomb. Proc. National Academy of Sciences 43:324 (Apr.), 1957.
5. Henshaw, P. S., and Hawkins, L. Incidence of Leukemia in Physicians. J. Nat. Cancer Inst. 4:339, 1944.
6. March, H. C. Leukemia in Radiologists in a 20-Year Period. Am. J. Med. Sc. 220:282, 1950.
7. Duffy, B. J., and Fitzgerald, P. J. Cancer of the Thyroid in Children: A Report of 28 Cases. J. Clin. Endocrinology 10:1296 (Oct.), 1950.
8. Simpson, C. L.; Hempelmann, L. H.; and Fuller, L. M. Neoplasia in Children with X-Rays in Infancy for Thymic Enlargement. Radiology 68:840 (June), 1955.
9. Clark, D. E. Association of Irradiation with Cancer of the Thyroid in Children and Adolescents. J.A.M.A. 159:1007 (Nov. 5), 1955.
10. Court-Brown, W. M., and Doll, R. Leukemia and Aplastic Anemia in Patients Irradiated for Ankylosing Spondylitis. Special Report Series No. 295. London: M. Res. Council, (June), 1956.
11. Moloney, W. C., and Kastenbaum, M. A. Leukemogenic Effects of Ionizing Radiation on Atomic Bomb Survivors in Hiroshima City. Science 123:308 (Feb.), 1955.
12. Wald, N. Leukemia in Hiroshima City Atomic Bomb Survivors. Ibid. 127:699 (Mar. 28), 1958.
13. Stewart, A. Malignant Disease in Childhood and Diagnostic Irradiation in Utero: A Preliminary Report. Lancet 271:447 (Sept.), 1956.
14. Lewis, E. B. Leukemia and Ionizing Radiation. Science 125:965 (May 17), 1957.
15. Blair, H. A. Data Pertaining to Shortening of Life Span by Ionizing Radiation. The University of Rochester Atomic Energy Project Report No. UR-442. Rochester, N. Y. (May), 1956.
16. Warren, S. Longevity and Causes of Death from Irradiation in Physicians J.A.M.A. 162:464 (Sept. 29), 1956.
17. Seltser, R., and Sartwell, P. E. Ionizing Radiation and Longevity of Physicians. Ibid. 166:585 (Feb. 8), 1958.
18. National Committee on Radiation Protection: Permissible Dose from External Sources of Ionizing Radiation. National Bureau of Standards Handbook No. 59. Washington, D. C.: Gov. Ptg. Office, 1954 (as revised January, 1957).
19. Copies available from Chief, Division of Radiological Health, Bureau of State Services, Public Health Service, Dept. of Health, Education, and Welfare, Washington 25, D. C.
20. Executive Committee of the American Trudeau Society. The Chest Roentgenogram and Chest Radio-

graphic Surveys Related to X-Ray Radiation Effects and Protection from Radiation Exposure. Am. Rev. Tuberc. 77:203 (Feb.), 1958.
21. Poppel, M. H.; Sorrentino, J.; and Jacobson, H. G. Personal Diary of Radiation Dosage: Plea for Standardized System. J.A.M.A. 147:630 (Oct. 13), 1954.
22. International Commission on Radiological Protection and International Commission on Radiological Units and Measurements: Exposure of Man to Ionizing Radiation Arising from Medical Procedures—Enquiry Into Methods of Evaluation. Phys. Med. & Biol. 2:107 (Oct.), 1957.
23. National Committee On Radiation Protection. Regulation of Radiation Exposure by Legislative Means. National Bureau of Standards Handbook No. 61. Washington, D. C.: Gov. Ptg. Office (Dec.), 1955.

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This paper was presented before the Middle States Public Health Association at the Ninth Annual Meeting in Milwaukee, Wis., April 29, 1958.

"The Team of Private Practice and Public Health—In the health field [we must recognize] how different are the major health problems of today from those which concerned us a few years ago. Due largely to the development of preventive health practices, clinical and public health, and to the use of antibiotics in treatment, acute illnesses have ceased to be the major threat to the health of the Nation. Our number one problem now is chronic illness and disability. . . . The logical role of the public health agency in the community is to initate [communty] planning and to provide many of the special services required by your patients with chronic disease and disability. The team or group approach, in which physicians, health officials and other specialists participate, is mandatory in discharging these responsibilities. This approach implies a mutuality of respect and responsibility on the part of all persons involved. . . . A first step, obviously, is to define the problem. Here the public health approach may prove particularly helpful. Through epidemiologic studies, public health agencies have often learned how a disease can be controlled even before its etiologic agent is known. Retrolental fibroplasia, endemic goiter, and pellagra are well known examples. Similar studies have demonstrated the relationship of rubella in the first trimester of pregnancy to the occurrence of congenital heart disease in the infant, and the relationship of streptococcal infections to the subsequent development of rheumatic fever. It is quite possible that epidemiologic studies of cancer, hypertension, coronary artery disease and other chronic conditions may prove equally lucrative. . . . Group planning and action calls, first of all, for a certain attitude of mind toward the changes that have occurred and the contributions others can make—a tolerance of ways and thoughts which are not necessarily ours; an open mind in the free spirit of science; a ready acceptance of the best from any and every source; an attitude of rational receptiveness rather than antagonism to new ideas."

(From an article by L. E. Burney, M.D., "What Can Public Health Contribute to the Private Practice of Medicine?", in Diseases of the Chest 31:228:234 (Feb.), 1957.)

In some parts of the country new patterns of community health services are needed to meet the needs of today and tomorrow, and the day after tomorrow. There is as yet no firm ground on which to base these patterns. This survey of present needs indicates possible approaches to the future.

THE DEVELOPMENT OF COMMUNITY HEALTH SERVICES

Jack C. Haldeman, M.D., F.A.P.H.A., and Evelyn Flook

Problem

TODAY'S PRACTICE of providing community health services through local units was developed nearly a half century ago. It was well suited to the most critical health problems of that time and has continuously proved its value in bringing public health to the people.

In recent years, however, there has been little extension of the traditional pattern of local health services. Many parts of the country still have no organized local health services. Other areas have services which are only fragmentary in nature. This may stem from the many changes in health problems which have occurred over the years. It may be that new and additional resources—such as voluntary health agencies, industrial health programs, insurance schemes, and other prepayment plans—are now providing, more acceptably, some services which in the past were supplied by the health department. Or perhaps the greater interest of private physicians in preventive medicine coupled with better methods of communication and transportation and increased public enlightenment regarding the individual's own responsibility for his personal health have reduced the need for organized health departments.

Whatever the cause might be—in view of the many changes which have occurred, both in health problems and in resources for meeting them—the entire concept and structure for the delivery of community health services should be reexamined.

Trends in Organization

Local health departments have flourished during the past half century. Recently, however, the extension of organized local health services to new areas appears to have reached a plateau. Since 1952, the number of counties so served has hovered around 2,200 and the percentage of population involved, from slightly under to slightly over 90. Today, 2,274 of the country's 3,067 counties are served by 1,435 full-time health organizations. This means that one-fourth of the counties—representing nearly 10 per cent of the total population of the country—still are uncovered by the familiar network of organized local health services.

When compared with the country as a whole, counties without full-time organized local health services are found to have the following characteristics:

They are sparsely populated.
They have a small total population.
The median age of the population is relatively high.
A high proportion of the population is employed in agriculture.
A very small proportion of the population is nonwhite.
They have a relatively high family income and educational level.
Their location is concentrated in the western Great Plains and Rocky Mountain sections of the country.

In developing new patterns of health services which might be more suitable for such areas, special attention should be given to their particular health problems and needs, to their history and methods of operation, the feelings and wishes of the people, and the adequacy of existing public health practices.

Deficiencies in Service

Measurement of the growth or status of local health services by geographic coverage alone can be very misleading. Staffing and financing patterns are more accurate indexes of the intensity of services, and program changes can indicate whether health departments are adapting their services to meet present-day needs.

The scope and intensity of services provided by existing local health departments varies tremendously. Because of limitations in staff and budgetary resources, the coverage is very thin in some areas. Particularly is this true of many state health districts where often as many as eight or 10 counties are served by a minimum staff of one physician, a sanitarian or two, and several nurses.

Staffing—During recent years there have been only slight gains in the total number of persons employed by state and local health agencies. The lack of progress in health department staffing is accentuated when related to growth of the country's population. Between 1951 and 1957, the population of the United States increased 11.5 per cent, whereas the total number of full-time personnel employed by state and local health departments increased only 7.5 per cent. Even this small amount of growth has lacked uniformity, both geographically and on the basis of professional categories in which the increases occurred.

Nurses and sanitarians accounted for the greater part of the increase. Indeed, there are actually fewer physicians, engineers, and laboratory personnel engaged full time in public health activities today than was the case six years ago. By 1957, 440 units—representing 31 per cent of the total number of local health organizations—were without a health officer, or were temporarily being served by a neighboring health officer.

Geographically speaking, personnel increases occurred in only about half the states and substantial growth was concentrated in only a few. Among the half of the states which lost personnel, five experienced reductions of more than 20 per cent.

The personnel-population ratio, or number of personnel per 100,000 population, is less favorable in 1957 than in 1951. This trend applies to all types of personnel in state and local health departments except nurses, for whom there was only a slight increase. The unfavorable trend is particularly striking in local health departments serving areas of less than 100,000 population. In these smaller areas even the nurse-population ratio—which, for the country as a whole, improved somewhat during the past six years—was lower in 1957 than in 1951. Since more than 75 per cent of all health departments in the country serve fewer than 100,000 people, the situation must be regarded with real concern.

Any enrichment of the programs of official health agencies to meet the newer health problems will require either additional staff, a realignment of duties of personnel presently employed, or a change in the basic role of the health department in providing needed community health services.

Expenditures—Measures of growth based on expenditures are likely to be deceptive because of the changes in the value of the dollar. In addition, there have been varying estimates of the amount of money which will provide a minimal level of adequate public health services at any particular time. The amounts spent by local health departments are, on the average, below the lowest of the present estimates, which range from $2 to $3. In 1956 the expenditures of local health departments, as reported to the Public Health Service, equalled $1.08 per person in the United States as a whole and about $1.35 per person when only that part of the population living in areas served by full-time health units is considered.

The problem of financing local health services is considerably more acute in health departments serving populations of under 100,000 than in those serving more than this number of people.

The total expenditures for state and local health services vary from $3.30 per capita to less than $1. (These figures exclude the costs of construction and operation of hospitals.) When expenditures of state and local funds for public health services are related to state per capita income, it is found that the poorer states are spending a larger share of their available resources on health than are the wealthier states.

Although there has been a net increase of 61.2 million dollars (71.1 per cent) in state appropriations for public health since 1950, this increase has been concentrated largely in a few states. Two states—New York and Pennsylvania—accounted for 36 per cent of the increase and five states, for 51 per cent. In four states the percentage increase amounted to less than 10 per cent, and in one state, West Virginia, appropriations have been reduced since 1950.

Of that $61.2 million increase between 1950 and 1957, about $50 million was earmarked by state legislatures for some specialized type of public health programing such as tuberculosis control, mental health, water pollution control, etc. Hence most states have made relatively little provision for the growth of basic staff or organizational structures for the delivery of general community health services.

Local appropriations for public health increased between 1950 and 1957 by approximately $66 million (72.9 per cent). However, five states—New York, California, Ohio, New Jersey, and Pennsylvania—accounted for 57 per cent of the increase.

It is estimated that the costs of ongoing operations of state and local health departments have increased at least 50 per cent since 1950, as a result of salary increases and increased costs of supplies, equipment, travel expenses, etc. In view of these accelerated costs, only a few state and local health departments are able to provide substantially more service than they were furnishing in 1950. Although metropolitan areas have not fared so badly as more rural areas in maintaining stability of staff and financing, the rapidly changing needs for health services in such areas pose particular problems.

New Patterns of Community Health Services Needed

In looking to the future and the patterns of community health service which will best meet its needs, there are several vital points to be considered. Most important, perhaps, are:

Changes in the kinds of health problems which are of major concern.

The fact that health departments as we know them are not equipped to do the whole job.

Geographic and population bases on which many health units of the past have been established (75 per cent of all health departments serve fewer than 100,000 people) may not provide an adequate financial or technical base for the health services most needed today.

Health services are now being obtained from a variety of additional sources.

In some sections of the country there is strong resistance to provision, or use, of "public" (government-operated) services.

Individuals themselves must assume more responsibility for protection of their own health today than in the past.

Current Health Needs

The present structure of local health organization was developed for such basic public health activities as communicable disease control, general environmental sanitation, milk and food sanitation, etc. These activities are as important today as when they constituted the *total* public health program. However, our methods of attack—and reliance upon the health department exclusively—have changed even for these fundamental health problems.

Old Health Problems Require New Methods

Tuberculosis

Treatment can now be administered in large measure by a private physician to the patient at home, in his office, or a clinic.

Case-finding activities are more productive when carried out selectively than when extended on a community-wide basis.

Other Communicable Diseases

Intensive poliomyelitis vaccination programs have been carried out through school programs, in health department clinics, in the private offices of practicing physicians, or some combination of these methods. Despite these efforts, less than half the population under 40 have had the basic three injections and over a third have had no vaccine at all. Clearly, even greater effort is required to extend protection to this susceptible portion of the population. This may mean that new or different educational approaches will have to be used.

Local medical societies as well as official and voluntary public health agencies, the pharmaceutical profession, and drug manufacturers were all intimately involved in planning for the widest possible protection of the population against Asian influenza.

Food and Milk Sanitation

New knowledge and the changing food processing industry require marked modifications in public health practices and relationships. In coping with problems of milk sanitation the approaches used by public health agencies are quite different from those employed a decade or more ago. But the main issues in planning for community health services of the future are for the relatively new areas of public health concern.

Meeting the Newer Health Problems

Prevention and Care of Long-Term Illness

Research to find preventive procedures for the chronic diseases is probably today's major health need. However, all that we now know is not being fully applied.

Positive community action will be required to supply the wide range of services necessary to prevent the occurrence or progression of chronic disease and disability. Diagnosis and medical supervision by the private physician are paramount, but services of the private physician must be supported by those of the laboratory, the hospital, the rehabilitation facility, and a number of

related services. Nursing care is needed in the hospital and in the home. Physical therapy, nutritional advice, medical social services, and a variety of others must be arranged for. These should be planned, integrated community services to aid and supplement the care of the patient by his physician.

Obtaining and Financing Medical Care

This is an integral part of the chronic disease picture, though not limited to it. In so far as possible, physicians in private practice should be relied upon to provide whatever curative medical services are needed, once the effectiveness and value of the method of treatment have been tested and accepted. In some communities, however, there are not enough physicians to meet the need for service, or some persons are deprived of care because of their inability to pay for it. Under these circumstances, clinics must be established or other appropriate arrangements made for delivery of service to the people requiring it.

Much more needs to be done in providing a wide array of services in the home for patients suffering from long-term illnesses. It has been demonstrated that, after intensive treatment in the hospital for a short period of time, it is possible to give equally satisfactory and much less expensive care at home for a number of conditions, including certain mental illnesses and tuberculosis. Such programs can also effectively reduce the load upon our hospitals and other medical services. Arrangements should be made for extending them to patients who can pay for the service as well as to the medically indigent group.

Mental Health

Much greater emphasis must be given to mental health. Experimentation with and evaluation of promising drugs for therapy of mental illness must continue. Concurrently, however, more guidance and counseling must be provided to school children to assist them in adjusting to the problems they meet. Programs for the prevention of alcoholism and drug addiction and for the rehabilitation of those under treatment should be expanded.

Dental Health

More effective health education and interpretation to the public of the value of good dental health should be among the major health goals of the present and the immediate future.

In order to bring the benefits of water fluoridation to the one-third of the population who are served by individual water supplies, it will be necessary to focus public and professional attention on the newer methods available for home fluoridation. Establishment of community service clinics and development of prepayment systems for dental care are other important aspects of a total community dental health program which must be arranged for.

Accident Prevention

Since accidents now rank fourth as an over-all cause of death and first among age groups from one to 35 years, study of the underlying causes of accidents and development of effective preventive and control measures are now among the major public health challenges.

Control of Water and Air Pollution

The nation is facing increasing problems of water and air pollution. Greater conservation of water resources through pollution control is growing more essential daily. There is growing public alarm about the problem of air pollution in metropolitan industrial areas. Expansion in the peacetime uses of nuclear energy adds new contaminants to air and water, further compounding the problems.

Major air pollution problems need to be pin-pointed more precisely through

field investigations. Little is known about the amounts and types of polluting materials being discharged into the air and about their reactions with each other to form new compounds. Health authorities and industrial groups must, together, devise plans for studying these problems and developing control measures. In water pollution control improvement of methods of treating industrial wastes and municipal sewage at lower cost is the key factor.

Radiation Protection

Sources of potential radiological hazards are steadily increasing. Safe and economical handling and disposal of radioactive wastes is becoming a most important health problem. Special laboratories will be needed for radiation assessment; proposed sites of atomic energy industries will have to be evaluated with respect to environmental health hazards; requirements and facilities for waste disposal must be determined.

This enumeration of today's leading health problems is far from exhaustive. Yet it is quite clear that they require a wider range of professional competence and more complex facilities and services than did the primary health problems of earlier days.

Health Department Resources Too Limited

Many local health organizations as they are now constituted find it difficult to fit these newer programs, so essential to reducing the nation's total disability burden, into their traditional pattern of operation. For example, the majority of health departments have neither the kind nor the number of personnel to cope with the long-term illnesses—particularly with their early detection and treatment and with the rehabilitation and retraining of patients after they have been stabilized. They also lack the needed physical facilities. Far more community cooperation, far more joint planning by public health personnel and the private practitioners of medicine, far more individual understanding are required than for any of the earlier health programs. In dealing with the newer environmental health problems arising from progress in industrial technology, special training must be provided for personnel presently employed. Close cooperative work with industry will also be required.

Obviously, the geographic and population bases on which many health units of the past have been established do not provide an adequate financial foundation for the health services most needed today. There is need for redefinition of functional areas most suitable as a geographic base for planning health programs. This is a particular problem in the growing suburban areas extending beyond the corporate limits of urban centers—areas in which public health problems multiply more rapidly than governmental organization and administration can be adapted to cope with them. In some places the suburban fringes of several separate cities have extended until they touch, and are separated only by artificial political boundaries which bear little or no relationship to existing demographic conditions. Common health needs of the continuous strip must be approached through a bureaucratic maze engendered by the number of governmental jurisdictions involved. Moreover, some of these have totally inadequate resources to meet the burden of public service which they have suddenly inherited.

Through broader regional planning the interdependence of areas with higher resources and those with lesser resources can receive full consideration.

If we are to develop adequate public health programs to meet current needs, the resources and services of community

groups—social, economic, and educational—must be welded into a smoothly functioning whole for maximum continuity of service to the greatest number of people possible. The exact nature and role of the official health agency which can function best in this broader concept of community health services are yet to be determined. Unknown, too, is the extent to which generally uniform patterns for the delivery of health services will be feasible—or even desirable. It has been suggested that a public health agency might most profitably serve as a community catalyst—a central "coordinator" and "obtainer" of the necessary services, providing as many as it is equipped to do. This suggestion assumes, of course, that needed services are available from some other source in the community, which may or may not be the case.

Health Services from Other Sources

The fact that nearly 70 per cent of our total population now have voluntary insurance against some part of the costs of medical care is extremely significant in considering a community's health needs and resources. The movement for development of industrial health plans which may be sponsored by employees, unions, employers, or a combination of these has been growing at an amazing rate. Coverage of these plans ranges from hospital or medical care insurance for the employee only to complete preventive health service and medical care for the worker and his entire family. There is little evidence, however, that services available under these plans are coordinated in any way with health services of the official health agency or with community health services provided under any other auspices. Thus there is duplication of some types of service and wide gaps with respect to others.

Participation by the General Consumer Public

We are moving into an era of public health in which individuals themselves must assume more and more responsibility for protection of their own health. To a large extent the effectiveness of community public health programs of the present and the future will depend upon their taking into account the history and methods of operation of the community, the feelings and wishes of the people, as well as specific knowledge of the existing health problems and available technical medical knowledge.

More information is needed regarding the attitudes toward health and health services of different ethnic and occupational groups, educational and income levels, in different geographic locations, and the bearing these factors may have on the way health services should be organized and delivered in a community. There is a strong indication that professional health workers may place very different priorities on the need for various types of health services and the way they should be provided than does the general public.

Research in Public Health Practice Needed

The foregoing discussion leads to two major conclusions:

1. The need for new patterns of community health services is well established.
2. There is a dearth of specific knowledge as to what those patterns should be.

Extensive research is needed to find answers to the many questions regarding the development of effective community health services, including the concepts and principles which govern the present structure of health services in this country. This involves, among other areas, experimentation with new or alternative methods for the delivery of

community health services, including the provision of medical care by private practitioners, as well as proprietary, voluntary, and governmental agencies. What type of research or study projects could lead us to knowledge of what the new patterns of community services should be? A few possibilities are cited:

1. Research in the use of new types of personnel.
2. Research in ways of organizing community resources (official, voluntary, and private) and of delineating responsibilities and relationships for most effectively meeting the current and future health needs of the public.
3. Research in the application of improved administrative technics and procedures to state and local health department operations.
4. Research in the establishment of different types of jurisdictional boundaries (regionalization of services). For example, what type of organization is practical for counties of less than 10,000 population?
5. Research in ways of obtaining, retaining, and more effectively training competent health personnel.
6. Research in more satisfactory methods of financing community health services.
7. Research in broad, over-all community planning and design for maximum health protection of all population groups.

The Public Health Service has initiated a modest program of community research for the purpose of developing and scientifically testing new, more effective, and acceptable ways of meeting health needs—as seen by the general public, by community leaders, and by professional health workers. Over a period of years, the program will be extended to different types of geographic areas of widely varying characteristics. As a first step of this continuing program, a pilot study is now being carried out in Kit Carson County, Colo., to acquire experience in the use of interdisciplinary public health and social science methods for obtaining information regarding health needs and the feasibility of various ways of meeting selected needs. Analysis of field data collected is now in progress.

Recognizing that much, much more research in public health practice is needed, the Public Health Service, through its research grants program, is strengthening its support of investigations by state and local health departments and universities dealing with problems related to the development, operation, and evaluation of health services for communities as a whole—or of segments of the total population. The Public Health Research Study Section has been reconstituted, with wider representation from the field of public health administration and education. This change is designed to insure the best possible competence for review of applications for grants to assist in carrying out public health research.

Wide interest has been expressed in this underdeveloped area by a number of groups and individuals in leadership positions. This augurs well for the development of a greatly expanded program of research in public health practice during the next few years. Hopefully, the findings will give us a more scientific basis than we have had in the past for the establishment of new patterns of community health services.

In the meantime, scattered experimentation with different patterns for the provision of community health services is already in progress. Unfortunately, too little information regarding these varied efforts is available for the guidance of others. Careful documentation of action taken *and results obtained* would be extremely useful.

Several of the better known efforts to tailor the community's pattern of health services to particular local conditions and situations are summarized below:

Examples of Varied Patterns of Community Health Services

Health Services for Sparsely Populated Rural Areas

California[1]—In 1953, there were 15 counties in California, with a total popu-

lation of around 200,000, without any organized local health protection and without much prospect of obtaining it through purely local efforts. Although the resident population of these counties is small and their financial resources are meager, there is a large temporary population in which "normal" health problems are accentuated.

Following surveys of major health needs in several typically rural counties of northern California—which were conducted by a team of consultants of the State Department of Public Health with assistance from interested community groups and individuals—nine counties have elected to contract with the State Department of Public Health for selected services rather than to establish and operate the usual type of local health department.

This program differs significantly from the "state district plan" in that the State Department of Public Health participates in the provision of public health services in these areas as a partner of local government. Thus the people feel that the program is their own.

There is no "standard" contract and no stereotyped program. An individualized contract is entered into by the state health agency with each separate board of supervisors. The contract seeks to embody the ideas and wishes of the board of supervisors and of the community as to their public health problems and needs and the program priorities and emphasis which they believe are needed to meet them.

Typically, the local staff consists of a part-time health officer, a clerk, and one or more nurses and sanitarians. Local funds are generally used for the part-time health officer and clerk, for the provision of office quarters and the purchase of supplies. The state employs nurses and sanitarians and assigns them to the county. The locally assigned state personnel live in the areas in which they work and receive their day-to-day instructions from the local health officer.

Health Services Radiate from a Hospital

Hunterdon County, N. J.—Immediately following World War II the people of Hunterdon County—a small, semi-rural county (estimated population—then 38,000; now 43,000)—began to attack a number of long-time community problems. With the interest of a wide diversity of groups and organizations centered on improvement of health and medical services, the need for a county hospital appeared to be foremost. However, the people wanted more information before a definite decision was reached. An experienced consultant was employed to study Hunterdon's health, hospital, and medical problems and to work with a county-wide citizens' committee in developing suggestions for their solution.

Based on the survey findings, the community decided to establish a Medical Center which would pioneer in bringing to a rural area the best medical care and health services available. This meant that the Center would be affiliated with a university medical school and hospital; that it would concern itself not only with the cure but also with the prevention of disease—through early diagnosis and care. Incorporated in the Medical Center would be a Health Center where the health and welfare organizations of the county could carry out their work with the cooperation of the Medical Center staff and make use of its equipment and research. The Center was envisioned as a community resource around which many services in the public health field would be clustered, i.e., a combined central public health laboratory and clinical site, with possibly the same person serving as county health officer and hospital administrator.

Public response to the drive for construction funds was enthusiastic, a mil-

lion dollars being contributed by citizens of the community. Such wholehearted support has been attributed to careful planning based upon specific community needs, as revealed by the survey.

The Hunterdon Medical Center—consisting of a 120-bed hospital and space for a diagnostic center and other services for ambulatory patients, a community auditorium, and public health offices—began operation in July, 1953.

The following positive features are among those cited by Trussell[2] in his analysis of the successes and failures of the first two years of operation:

Development of Lay Initiative and Responsibility

"The Medical Center originated through citizen action and has been carried to its present stage of achievement by citizen leadership coupled with consultation with experts and cooperation from the medical profession."

Increase in Local Medical Resources

"The Center has done much to improve the quantity and the quality of local medical care through a variety of methods."

Integration of General and Specialized Medicine

"A group of full-time and part-time salaried specialists supplemented by a visiting consultant staff now make available to the local citizen a spectrum of medical services for which he previously traveled some distance and at considerable expense. . . . The family physicians practicing in the county have become an integral part of the Center. They have been greatly aided in the care of their patients by the diagnostic, consulting, and rehabilitation facilities now available to them locally. New general practitioners have moved into the county. . . . This has done much to alleviate the shortage of locally available physicians."

Improvement of Patient Care

"The care of indigent and medically indigent individuals has been put on the same level in Hunterdon as that of the persons fortunate enough to be able to pay for the full cost of services."

Cooperation with Existing Services

"To a considerable degree, the Center has coordinated its activities on a sound and friendly basis with official and voluntary services throughout the county and State. In some instances, this integration could proceed further and no doubt will."

On the other side of the ledger, planning for the Center has failed in the creation of a county health department. Neither a county health officer nor department has come into being. Local communities and townships remain autonomous.

This does not mean that the original plan to emphasize preventive as well as curative medicine in the Center has been abandoned. Close cooperation is maintained with the State Health Department, which participated in a major way in the county's recent chronic disease survey; has provided a wide variety of equipment to facilitate the Center's diagnostic and screening programs; has contracted with the Center to furnish special services; and encouraged local public health nurses to integrate their program activities with those of the Center. Voluntary health agencies concerned with services for tuberculosis, cancer, poliomyelitis, dental, and cardiovascular patients have also, in large measure, integrated their programs with those of the Center.

Nearly half of the county's population has had some contact with the Center, as it continues to move toward its long-range goals—the direction of school and preschool health, premarital counseling, accident prevention, rehabilitation, and mental health.[3]

Perhaps the most impressive characteristic of the development of the Hunterdon Medical Center is the extensive citizen involvement in its origination, its

planning, and its day-to-day services. Although the Center has no formal auxiliary organization, more than 300 workers put in some 40,000 hours during 1954.[7]

Leadership of a Large Industry for Integrated Community Health Services

Richland, Wash.[8]—This community of 24,000 persons—the "Atomic City"—is unique in that its municipal functions are managed by a large industrial organization, the General Electric Company for the United States Atomic Energy Commission. Nevertheless, its integrated program of public health, a community hospital center, industrial medicine, and private medical practice might hold suggestions for any American community.

Complete, integrated medical services have been made available by the industry that has operated the plant and the community for the government for a period of nine years. These services consisted of public health, industrial medicine, hospital, and—for the first six years—general patient care. With all facilities closely grouped and with activities coordinated, the community medical center idea has been a reality.

Richland's public health program includes the "six basic functions," plus bedside nursing, school nursing, mosquito control, and welfare services—dealing primarily in the areas of family service, child welfare, and medical social work.

The industrial medical program is designed to materially reduce: occupational disease, accident frequency, personal illness, absenteeism, compensation costs and labor turnover. The program is carried out through medical activities that concern the individual employee and combined medical and engineering activities that concern the working environment.

A 106-bed hospital is the center of medical activities. Industrial medical services, including examinations and dispensary services, are administered in one section of the hospital. The public health building and the clinics for private medical specialists and dentists are located in close proximity to the hospital. X-ray facilities and laboratory services are available for industrial medicine, public health, hospital patients, and outpatients. The industrial medical dispensary serves as the emergency admitting center for the hospital. The public health chief, in addition to his usual duties, assists in planning hospital expansion and health education for employees, as well as for the general public.

Public Health Nursing Service Revamped for State-wide Coverage

Vermont[9]—Prior to 1951, public health nursing services in Vermont were unevenly distributed. Although there were no full-time city, county, or district health units, about a third of the state was extremely well covered as far as public health nursing service was concerned. Seven of the larger cities had nursing services supplied by private and publicly supported Visiting Nurse Associations; about twice that number of smaller communities supported one-nurse services through private and public funds; and school boards of a dozen or so communities employed school nurses, or helped pay for the services of the one community nurse in order to secure nursing services in their schools. But the rest of the state—the greater portion of the rural area—was totally dependent upon the nursing resources of the State Health Department.

In order to give state-wide coverage of generalized nursing service, the entire public health nursing staff of the State Health Department was redistributed. Currently, 34 staff nurses are stationed in 12 offices throughout the state and six nursing supervisors supervise these areas. Each nursing office has a dicta-

phone and other up-to-date equipment designed to minimize the time the nurses must spend on routine office duties.

Legal responsibility for the control of communicable disease throughout the state is delegated to the State Health Department. In areas having locally employed public health and school nurses, state nurses plan and work jointly with them in order to avoid duplication and to use these existing nursing services to their maximum capacity.

Through state supplementation of local nursing resources, Vermont has been able to recruit well qualified nurses and to strengthen services throughout the state.

A City Combines Nursing Services of the Department of Public Health and the Instructive Visiting Nurse Association

Richmond, Va.[6] — The Community Nursing Service of Richmond—representing a combination nursing service of the Department of Public Health and the Instructive Visiting Nurse Association—began operation in 1953. Purpose of the merger was to offer a more effective service providing for continuity of care, with less duplication of effort and confusion to families.

The combination service operates under the director of public health, who is legally responsible for the public health program. The nursing director is the administrator of the service and is responsible both to the city health director and the Board of Trustees of the Visiting Nurse Association.

The Board of Trustees of the Instructive Visiting Nursing Association has retained its incorporated status with all standing and special committees continuing to function. In addition, it serves in an advisory capacity to the Department of Public Health in relation to the public health nursing program. A Medical Advisory Committee of the Richmond Academy of Medicine provides consultation with respect to the total program.

Each agency controls and maintains separately its own budget, including income, personnel, and general expense items, the city assuming 60 per cent of the general expenses of the service.

Services offered are those previously provided by the separate agencies before the combination took place. Included are nursing care and health guidance to individuals and families in the home and clinics; assistance in the maintenance of environmental hygiene and in making epidemiological studies; and—under the direction of the physician giving medical care—nursing care to the acutely and chronically ill in the home. The nurses participate in maternal and child health, chest, immunization, and venereal disease clinics.

In addition to providing more satisfactory service, the combination service has been found to be more economical and to give a greater degree of job satisfaction to nurses working in the program.

REFERENCES

1. Dement, John C., and O'Brien, George F. Contract Public Health Services for Rural Counties—A New Approach to an Old Problem. A.J.P.H. 47,11:1414-1420 (Part One) (Nov.), 1957.
2. Trussell, Ray E. Hunterdon Medical Center. Commonwealth Fund. Cambridge, Mass. Harvard University Press, 1956.
3. A Medical Center Emerges from a Community Survey. Hospitals 29,3:76-81 (Mar.), 1955.
4. Norwood, William D.; Fuqua, Philip A.; and Sachs, Ralph R. Community Health Planning—Study of "Atomic City" (Richland, Wash.). J.A.M.A. 154,1: 44-49 (Jan. 2), 1954.
5. Vermont Health Bull. (June), 1955.
6. Reports of the First and Second Years of Service of the Community Nursing Service. Instructive Visiting Nurse Association and City of Richmond Department of Public Health (mimeo.).

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Prepared by the Division of General Health Services, Bureau of State Services, Public Health Service, for the 1958 Annual Meeting of the National Advisory Committee on Local Health Departments.

The provision of public health laboratory service through a coordinated network of local laboratories in California is described in this article. As a pattern, it has interest for all those concerned with local health services.

LOCAL PUBLIC HEALTH LABORATORY SERVICE IN CALIFORNIA

Jean Pufer, B.S., M.P.H., and W. Max Chapman, M.D., M.P.H.

ALTHOUGH PUBLIC HEALTH problems in California are not unique, there are a number of factors which tend to complicate the solution of these problems by health agencies. In the first place, the state has an area of 159,000 square miles, the coast line alone extending over 1,000 miles. The topography of this area is roughly V-shaped, with the Great Central Valley bounded by a coastal range to the west and the 14,000 foot Sierra Nevada on the east. The climate varies from the cool dampness of northwest coastal forests to the heat of irrigated deserts bordering on Arizona and Mexico. Since World War II the population has increased rapidly, so that there are now over 14,000,000 persons in the state.[1] Most of these people have come to California's increasingly industrialized cities from other parts of the nation—New England, the Middle West, and the South.[2] In some areas there are large groups of Negroes, Orientals, and Mexicans. In addition, there are many migratory workers, who are constantly moving from one section of the state to another as they follow the harvesting of the crops.

Because of these differences in geography, climate, composition of the population and other factors, the public health needs of the people have been served traditionally by local county or municipal health departments. Several of these jurisdictions have offered public health laboratory service for many years; in fact, one city laboratory was established before the state hygienic laboratory in 1905. Additional city laboratories were organized after 1912, following the State Board of Health ruling that cities with populations of 25,000 or more should provide their own public health laboratory services. By 1927, the State Health Department had received legal authority to regulate and inspect these local laboratories.[3]

The Social Security Act of 1935 provided the impetus to initiate laboratory work in connection with the control of venereal disease. A number of health departments obtained microscopes and other equipment with state funds set aside by the May Act of 1937. As a result, during the next decade approximately 19 city and county laboratories were established or expanded to provide routine services to local communities.

Other factors aiding the expansion of laboratory service were the passage of laws relating to state financial aid for local health administration in 1947, and

the Public Health Assistance Act in 1948. Since this time over a dozen new public health laboratories have been added. Of these new laboratories, eight are located in rural areas of the state, where the population approximates 50,000. Still another factor affecting the development of public health laboratory service was the Hill-Burton Act of 1947, which provided federal, state, and local funds for new health centers. This act is directly responsible for the establishment of new laboratories in at least six communities where laboratory service previously had been limited or nonexistent.

Number and Types of Laboratories

At present, 41 local public health laboratories provide direct service to 99 per cent of the population of California. They range in size from large organizations with a professional staff of 35 microbiologists serving a population of over 2,000,000 to small rural laboratories, each with a staff of one microbiologist, serving approximately 50,000 people. Administrative organization in these jurisdictions varies considerably. Most of the public health laboratories are single county units; three are city laboratories; one is a city-county laboratory; two are bicounty units; one is a combined health department-county hospital unit; one represents a local health district. The Division of Laboratories of the California State Department of Public Health still offers direct service to those rural and mountain areas without local public health laboratory facilities.

Legal Status

Legal authority for municipal and county laboratories is provided in the California Health and Safety Code,[4] which outlines the purpose for which laboratory services are established and the justification for expenditure of city and county funds for this purpose. Another section specifies that the State Department of Public Health is responsible for approval of the technical personnel and equipment in these laboratories. According to State Board of Health regulations, health departments serving a population of 50,000 or more must provide local public health laboratory services.[5]

Since the local public health laboratory is an integral part of the health department, the laboratory director is responsible to the health officer and to the local board of supervisors or city council. However, according to regulations,[6] the California State Department of Public Health approves all official public health laboratories and certifies all professional personnel employed by them. Laboratory Field Services is the unit within the Division of Laboratories responsible for the administration of these regulations. This unit provides two public health laboratory consultants who devote full time to local problems and to coordination of 41 local laboratories throughout the state. Regular visits are made once or twice a year to each laboratory to give consultation on specific problems; to explain new technics developed in federal, state, and local laboratories; to acquaint the professional personnel with changes experienced in other local laboratories; to determine the progress of recently trained microbiologists; to observe local training programs; and from time to time to conduct complete reviews of the laboratory services offered.

Role of the Local Public Health Laboratory

In a policy statement adopted by the California Conference of Local Health Officers in 1954,[7] the role of the laboratory was summarized as follows:

1. To provide laboratory service for the

various program units of the local health department.

2. To assist in the diagnosis, control, and prevention of communicable diseases and other illnesses of public health concern. In providing this service, the public health laboratory services are available to the local physician if in his judgment such services are required.

3. To provide specialized knowledge in the public health laboratory field for the purpose of consultation with other laboratories in the community.

Scope of Activity

In 1956, local public health laboratories in the state received and processed 1,114,000 specimens representing 1,877,000 examinations.[8] A breakdown by type of examination reveals that 15 per cent involved diagnostic microbiology, 53 per cent were serological examinations, 24 per cent were concerned with sanitation, and 7 per cent were clinical and miscellaneous tests. There is considerable variation among the laboratories with regard to the type and size of the work load. In the first place, 31 of the 41 laboratories provide service for milk inspection programs approved by the California Department of Agriculture; the remaining 10 do not examine milk or milk products. Second, those public health laboratories closely associated with county hospitals often accept various kinds of specimens originating in the hospital. At the present time, only one public health laboratory in the state provides clinical laboratory service for a county hospital. Despite the prevalence of opinions to the contrary, combining health department and hospital laboratories has not proved successful. Experience in California has not justified this combination except as a temporary measure under unusual circumstances.

Program emphasis in the individual health departments accounts for some of the differences in the types of examinations performed. In some areas, a strong sanitation program is reflected in a high proportion of water analyses and examinations of samples related to restaurant sanitation. In other jurisdictions, a review of laboratory activity may indicate a lack of program emphasis; for example, several local reports show a very small number of specimens relating to acute communicable diseases or to tuberculosis control. Among other factors influencing variation in the number and type of examinations are the resources of the laboratory in terms of personnel, equipment, and space; the relationship of the health department to local physicians; the interest of the community in public health activity; and the availability of clinical and hospital laboratory services in the community.

Because of limitations of local resources or infrequency of requests, certain types of specimens or samples are submitted to the State Division of Laboratories.[9] Such referrals in 1956 included 300,000 examinations relating to animal inoculation, parasite and fungus identifications, specialized serologic procedures, chemical analyses of water, certain types of food poisoning, viral and rickettsial diagnosis, and identification of unknown organisms.[10] In turn, the Division of Laboratories refers specimens involving special technics to the U.S. Public Health Service laboratories. Technical activities involving air pollution and industrial hygiene have been developed within the state laboratories. Many of these procedures are now being adopted by local health departments.

Personnel

In order to work in a public health laboratory in California, an individual must be certified as a public health microbiologist. Section 1080, Title 17 of the California Administrative Code outlines specifically the qualifications

leading to certification.[6] The applicant must have a bachelor's degree, with a major in public health or medical microbiology or the equivalent, as determined by the Department. In addition, six months' practical experience in a public health laboratory, or one year in a clinical laboratory, is required. The applicant must pass both an oral and a written examination for certification. The State Department of Public Health provides 18 training positions a year for qualified university graduates. The six months' training is obtained either at the State Division of Laboratories or in selected local public health laboratories. A few of the large city and county departments also maintain training programs, primarily as an aid to recruitment of professional laboratory personnel.

Much of the routine work in any laboratory involves many tasks of a nontechnical nature, such as routing and handling specimens, assembling mailing containers, numbering tubes, cleaning and sterilizing glassware, preparing simple media, and typing and filing reports. These nontechnical procedures may occupy half the time of the professional staff. In order to facilitate the work, most health departments employ laboratory assistants and clerks. As in other professional fields, there has been a recent trend to utilize more nontechnical personnel, thereby releasing microbiologists from many routine tasks to assume a greater work load and additional professional duties.

Coordination

Although by regulation the State Department of Public Health can exercise a limited amount of supervision in local public health laboratories, the staff of the Division of Laboratories prefers to work closely with local personnel through consultation, exchange of information, administrative and technical review of services, and opportunity for refresher training. A significant step toward a coordinated public health laboratory service was the establishment in 1950 of the first three-day training institute held in the state for public health laboratory directors. Similar institutes have been held yearly since that time. The major purpose of these sessions is to provide an opportunity for discussion of problems, exchange of ideas, presentation of new technics, and contact between local and state microbiologists. Over the years, discussions have centered not only on technical subjects such as the serology of venereal disease and enteric bacteriology, but around administrative problems of mutual concern to all laboratory directors, such as recruitment, budgeting, communications within the department, program evaluation, cost analysis, implications of chronic disease, and future trends of laboratory service. Even more popular than the formal program subjects are the problem clinics and periods of informal consultation for groups as well as for individuals.

During the past few years, college and university professors connected with the teaching of medical technology have been invited to participate in these institutes. They have joined the assembly of laboratory directors with enthusiasm and have contributed materially to the success of the programs.

The institutes have succeeded in reaching and maintaining the objectives for which they were designed. Perhaps even more significant in the development of statewide coordinated laboratory service was the formation in 1951 of the California Association of Public Health Laboratory Directors. In the beginning, the Association functioned as a sounding board to advise the Department of Public Health through the Division of Laboratories with regard to policy affecting local laboratory service. The first major

opportunity for action was the development of a guide to laboratory services at the request of the California Conference of Local Health Officers.[9] This guide was the first of a series later developed by other professional public health groups and conference committees to outline local health department program and service activity.

Since this initial accomplishment, other studies have been undertaken by the laboratory directors' association in cooperation with the State Division of Laboratories. In 1957 a guide to laboratory safety was completed and presented to the California Conference of Local Health Officers[11]; the manual will be revised from time to time to keep it current. Another accomplishment was the recommendation two years ago of a format for laboratory report forms which has since facilitated the purchase of forms by combining the orders from several laboratories. Present studies include the development of a classification of titles, qualifications, and duties of public health laboratory personnel and an attempt to work out problems relating to laboratory methods. Information about the progress of the study committees at work on these projects is disseminated to all public health laboratory directors by means of a quarterly newsletter compiled and distributed by the staff of Laboratory Field Services.

The relationship of the California Association of Public Health Laboratory Directors to the Division of Laboratories might be compared with that of the California Conference of Local Health Officers to the State Department of Public Health. Philp and Merrill[12] outlined how the Conference functions in its advisory capacity to the state director of public health. Liaison between the two groups is effected through the Department's Division of Local Health Service.[13] The Conference operates through several study committees that call on state staff for technical consultation. In a similar manner the laboratory directors' association functions through its study committees, referring the findings of these groups to the California Conference of Local Health Officers through the Division of Laboratories. Liaison between the two laboratory groups is maintained by Laboratory Field Services. By this mechanism, laboratory problems can come to the attention of the health officers, either through the regular channels of communication within the local health department, or to the Conference, directly through the Division of Laboratories or indirectly through the California Association of Public Health Laboratory Directors.

Status of the Laboratory Within the Health Department

Through the joint efforts of local and state personnel, public health laboratory service in California has grown into an effective, coordinated system. The development of coordinated activity may be due in part to the heightened awareness of professional responsibility among public health microbiologists. In turn, their professional growth has been stimulated and maintained by their participation in this unique and challenging system.

Even though this coordinated service appears to be suited to California's needs from a laboratory point of view, how do these local laboratories fit into their respective health departments? This question cannot be answered by laboratory people alone. However, a recent study[14] indicates that 35 out of 41 public health laboratory directors in the state are included in administrative staff meetings. In those health departments holding general staff meetings, the laboratory personnel attend in most instances.

More and more local laboratory directors realize the importance of their

roles as consultants and advisers, in addition to their traditional roles as technical specialists. Local health officers also have recognized this fact officially by passing the following resolution in their November, 1956, meeting:[15] "Resolved, That the California Conference of Local Health Officers encourage public health laboratories to act as resource laboratories. . . ."

Summary and Conclusions

The operation of local public health laboratory service in California has been described. The development of coordinated activity through a network of decentralized laboratories appears to be the most effective way to provide direct public health laboratory service to the citizens of California.

REFERENCES

1. Population of California, July 1, 1957. Department of Finance Records, State of California, Berkeley, Calif.
2. Health and Demography, 1956. Public Health Service, U. S. Department of Health, Education, and Welfare. Washington, D. C.: Gov. Ptg. Office.
3. Merrill, M. H. California Public Health Laboratories and Their Services to Physicians. California Med. 65:1–18 (Aug.), 1946.
4. Health and Safety Code, Chapter 7, Sections 1000–1002.
5. California Administrative Code, Title 17, Chapter 3, Subchapter 1, Article 2, Section 1276(f), Basic Service.
6. California Administrative Code, Title 17, Chapter 2, Subchapter 1, Group 3, Regulations Relating to County and Municipal Public Health Laboratories.
7. Minutes of the California Conference of Local Health Officers, November, 1954.
8. Local Public Health Laboratories Report, 1956. California State Department of Public Health, Division of Laboratories.
9. Bulletin No. 193, Division of Laboratories. A Guide to Laboratory Services Furnished by Local Health Department and State Health Department Laboratories.
10. Public Health Statistical Report, Part VI, Laboratories, 1954, 1955, 1956. California State Department of Public Health.
11. Minutes of the California Conference of Local Health Officers, May, 1957.
12. Philp, J. R., and Merrill, M. H. A Pattern for State-Local Relationships in Public Health. A.J.P.H. 46:1504–1512 (Dec.), 1956.
13. A New Pattern in Public Health Administration, 1951. California Conference of Local Health Officers.
14. Baba, S. Participation and Recognition of Public Health Laboratory Directors as Administrators in Local Health Department Organizations in California. Paper in partial fulfillment for an M.P.H. degree, University of California, 1957.
15. Minutes of the California Conference of Local Health Officers, November 27–28, 1956.

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Based on experience in Latin America, the author of this article discusses the role of the public health nursing aide. Important is the part of health education in the work of this group.

TEACHING HEALTH EDUCATION TO PUBLIC HEALTH NURSING AIDES

Jeanne Richie, B.S., M.P.H.

THROUGHOUT Latin America and most of the rest of the "underdeveloped" parts of the world, public health nursing aides or auxiliaries are carrying out the health education activities which are the responsibility of the public health nurses in more prosperous countries. These aides are generally recruited from among the young women of the community in which they are to work. Most have a limited basic education—six years might be the average in Latin America. Some have as little as three or four years. They ordinarily have a training course of from six months to a year to prepare them for their work.

Clearly, the limited basic education of these aides restricts their resourcefulness and adaptability. These qualities are also limited by the poverty of the environment in which they grow up. There are few books or periodicals for them to read, radios are scarce, they have little opportunity to travel and become acquainted with people and places outside their own community. They frequently share, to a degree at least, some of the misconceptions regarding health and disease which are current in their own culture group.

On the positive side, there are many advantages to the use of these young women in underdeveloped areas. Many of them are of good intelligence and most have a strong motivation to serve their own people. They are usually regarded with respect and affection by the people they serve. Since employment opportunities for young women are few, there are usually numerous candidates for every opening. Most of the aides cannot accept employment away from their homes because of custom, and most are happy to be close to their families. Thus, it is possible to recruit and hold employees in places where better educated women from the cities would not work. Once employed, they are likely to stay on the job, since there are few other work opportunities. Many continue to work after marriage, as the husband's income is likely to be low.

There are advantages in having aides work with people of their own community and socioeconomic group. They are familiar with the beliefs and customs of their own area, and, if they have outgrown the local misconceptions, are likely to be able to help others move in the same direction. They are not appalled by the poverty and ignorance which might immobilize someone from a more prosperous culture. They are perhaps less susceptible to discouragement, since each small improvement

counts more to a person who has grown up in a static society.

In one sense, however, a discussion of the advantages and disadvantages of using aides is irrelevant—there is no alternative. In none of the underdeveloped countries are there enough nurses to fill the needs of public health. There will not be a sufficient number in the foreseeable future, either, because of economic and educational factors. It appears that for some time public health nurses will have to act as supervisors of aides instead of giving service directly. It seems worthwhile, then, to consider ways of improving the quality of service given by these aides.

Before confronting the problem, it might be valuable to enumerate some of the responsibilities commonly carried by public health nursing aides and to describe variations in the abilities of different aides to execute these tasks. One of the basic jobs of the aides is persuading families to utilize the preventive services of the health centers, especially the prenatal clinics, well child conferences, and immunization clinics. These services are relatively new in most communities and, in getting the families to take advantage of them, the aides can be of great assistance to the program.

Another of the major activities of the aides is nutrition teaching. All except the poorest families should be able to improve their food intake at least slightly if they can be persuaded that the suggested changes mean an improvement in their well-being. The aides also spend a good deal of time in attempting to teach better personal hygiene and home sanitation. In many instances, levels are dangerously low.

The aides also attempt to help families with specific health problems: for example, tuberculosis. They explain isolation technic, the reasons for examination of contacts, and the importance of following the prescribed medical regime. Gastrointestinal infections are the first cause of death in most Latin American countries. The aides can help control these infections in infancy and childhood by encouraging breast feeding rather than bottle feeding, by helping mothers improve the nutrition and thus the resistance of their children, and by encouraging prompt treatment of acute gastrointestinal infections when they do occur. As with public health nurses in the United States, the aides' main function is health teaching on a family basis.

There can be no doubt but that the public health nursing aides make a worthwhile contribution to the public health program wherever they work. Since the health problems are so serious and since the public health program is so dependent on their contribution, it is important to do everything possible to improve the quality of their services. For the purposes of this discussion, it might be of value, first, to describe three types of aides according to the quality of their work; then, to describe the characteristics of the better aides; and, finally, to discuss a program designed to promote the development of the desired characteristics.

The poor aides devote most of their time during home visits to urging mothers to attend appropriate clinics and to keep themselves and their children under medical supervision. Some of these aides are well received by the mothers. The mothers seem to welcome the visit as a break in the daily routine and many follow the aides' instructions to keep clinic appointments. Other aides scold the mothers for not keeping appointments, and the atmosphere of the visit is less pleasant. Probably a fairly large proportion of even these mothers will keep appointments, but it is unlikely that they will learn much about the value of continued health supervision.

The better aides put a good deal more teaching content into their visits. They advise the mothers to include meat, eggs, milk, fruit, and vegetables in the family

diet; to keep their children in shoes to avoid parasites; and to dispose of trash and garbage properly in order to control flies. Undoubtedly, these aides accomplish more in persuading families to improve health patterns than do those in the group previously described. Some of these aides, however, seem to have a limited body of teaching matter which they recite in toto to every mother on every visit. While repetition certainly has its values, it seems likely that the aides could accomplish more if they varied their teaching according to the individual needs of each family as they change from time to time.

The best aides show a good deal of flexibility in dealing with special problems. For example, I visited with one aide who was calling on the mother of an infant whose clavicle had been fractured during delivery in the home. The mother was quite aware that something was wrong with her baby. She wept, she told us that she had gone to church and burned candles and prayed that her baby would become well. The aide showed considerable perseverance and imagination in trying to convince the mother that medical attention was the answer to her prayers.

On another occasion, I visited with an aide who was trying to persuade a mother near term to prepare her room for home delivery. The room was dark, poorly ventilated, small, and dirty. After the aide had talked with the mother for a time about cleaning and preparing the room, she realized that the mother was too apathetic with all her family burdens and the heaviness of late pregnancy to take the indicated measures. At this point, the aide ceased urging the mother and told her that she would return the following day and help her with any of the work of preparing the room which remained to be done.

The most resourceful and sensitive of the aides seemed to have personal attributes which enabled them to respond effectively to the various family situations they encountered. It should be the aim of the training course for aides to mobilize and develop whatever potentialities the students have for evaluating and responding successfully to different health problems. However, in addition to the training course, there are certain policies of selection and program administration which have a direct bearing on the problem of quality of service and which deserve mention at this point.

In the area of selection of candidates for training, the most important factors to consider, personality and motivation, are difficult to measure. Some of the personality traits which are important for the aide are cheerfulness, patience, and a willingness to work hard. It is not always possible to ascertain whether or not the candidate has these qualities by means of the interviews, recommendations, and written application which comprise the methods ordinarily used. A month or two of probationary employment before admission to the course might eliminate some who otherwise would not be found to be unsuitable until after admission.

It is absolutely essential for the aide to have a desire to serve her people. Without that motive, the work would be unbearably hard and dreary and her families could hardly be expected to profit by her attempts to teach them. Students without such a desire to serve usually will not complete the training course. However, the tools for selection described in the foregoing should be used with the aim of preventing the acceptance of such candidates for training.

Among the more objective criteria for selection of candidates are age and education. Age does not seem to correlate highly with success in profiting from the training course and in working well afterwards. Some girls of 16 or 17 are eager to learn and eager to work, while some older women whose children are in

school also seem to learn well and work effectively. On the other hand, the amount of education is very closely related to success in training and in a work situation. In general, the more basic education the student has, the more readily she can learn and the more adaptable and resourceful she will be in her family teaching. Intelligence, of course, is also important, and an intelligence test should probably be included in the selection routine.

Once the aides are in the field working, there are several administrative measures necessary for maintaining standards and improving quality of service. All these measures can be directed toward the specific objective of increasing the aide's ability to understand and meet the varying family health problems. The most important of these administrative measures is nursing supervision. By reviewing family histories, discussing special problems and observing home visits made by the aides, the public health nurse should be able to help the aides increase their effectiveness in teaching.

An important part of the supervisory program is a planned staff education program. The nurse supervisor should direct this program not only toward reinforcing and augmenting the aides' technical knowledge, but also toward improving their skills in health education. Probably the best method would be discussion and analysis of specific family health problems from the aide's experience. Another administrative necessity is a procedures manual. Such a manual is primarily useful as a means of maintaining standards and uniformity. From the point of view of health education, the contribution of the manual is indirect. It would be impossible to standardize methods of teaching for every type of problem situation. Rather, the manual helps to eliminate the element of selectivity from those aspects of the aide's work which can be routinized—bag technic, temperature taking, or giving immunizations, for example—and allows the aide to use her full potentialities and resourcefulness in the teaching part of her home visits.

Ideally, the aide's opportunity for developing skill in understanding and meeting the needs of her families would be broadened by limiting the types of health problems given her to deal with. If the work of aides is limited, for example, to maternal and child health, they would have less content to learn and should be freer to develop better teaching technics. However, such a division of labor is frequently not possible. Sometimes the aides have to do all the visiting in the area assigned to them.

A unit in health education for public health nursing aides in Latin America must be different from one for other health workers in other settings. It should allot limited time to the use of health education materials. Group work requires skills too advanced for persons with such limited background. The major emphasis must be placed on developing effective person-to-person communication.

The possibilities of using health education materials are limited for several reasons. Health agencies in Latin America are likely to be poor and so unable to afford pamphlets and posters. The use of materials with written or printed information is also limited by the widespread illiteracy.

Movies are of greater value, but people who rarely if ever see movies are likely to get only entertainment from even a strictly educational movie. Whenever movies are shown, therefore, someone with greater skill in group work than the aide should hold a discussion afterwards to be sure that the audience has gotten the point and has made a connection between the moral drawn in the film and their own lives. Other group teaching, such as mothers' classes, is best left to the nurse.

The health education unit might be divided into three sections, beginning with a classroom introduction. Some of the important principles that need attention in the classroom part of the health education unit before the practice period deserve special mention. Most of the aides have a tendency to give lectures instead of discussing problems with the families they visit. The necessity of give and take, asking questions, getting the mother's point of view must be constantly stressed. The aides seem to have a tendency to scold families, and strong emphasis must be placed on the importance of the positive approach. The students need to learn to structure and plan their visits. The visit should have a beginning, with an introduction of the aide if indicated, some sort of connection between the present visit and previous visits, and a statement of the objective of the visit. The central part of the visit should be devoted to content—teaching, evaluating the mother's learning, and finding out whether there are other health problems. The terminal part of the visit should include a summary of important teaching points, a reminder of any appointments made, and an arrangement for the next visit. After a short period of classroom discussion of principles and methods, the aides are ready to begin the second part of the program, with classroom practice in doing teaching interviews.

One of the best methods of teaching students how to do a home visit is role playing. Students always enjoy the experience and begin to get a feeling for the problems of presenting material clearly and persuading people to change their behavior patterns. Role playing gives the instructor opportunities to emphasize and explain important teaching principles within a fairly realistic context rather than in a vacuum. However, the realism of the role playing is dependent on the students having some knowledge of what goes on in a home visit; they should have opportunities to observe graduate aides or nurses making home visits before they start role playing.

For this part of the health education unit, a combination of concurrent class work and field work seems best. Students should have the opportunity to observe visits in the field, with a written list of points to observe. Was this a first visit to the family? How was the visitor received? What was the objective of the visit? Was the objective fulfilled? Were other health problems discovered? What arrangements were made for later visits?

After the visit, the instructor should discuss the events of the visit with the student observers. The post-visit discussion serves to evaluate the perceptive abilities of the student, to point out the purpose and interrelationship of various parts of the visit, and to emphasize the importance of seizing teaching opportunities and of dealing with special problems that come to light. After the observation visits, students should have the opportunity to role-play a similar visit or perhaps a series of similar visits.

After the period of combined observation visits and role playing, the students should be ready to begin the third phase of their preparation with simple interviews. Probably information-gathering interviews are best to begin with, for the student has the record or form as a guide. Such an experience should help her build self-confidence for more complex tasks. The next step would be supervised home visits, and, finally, practice home visits without the supervisor present.

The last period of practice home visiting provides one of the best opportunities for impressing upon the students the importance of regarding each family and its problems and, in fact, each home visit as something unique. If the supervisor-instructor can meet daily with all her students who are making practice home visits, she can do some valuable

teaching based on their experiences. What opportunities appeared? Were they fully exploited? What new problems came to light? How well were they met? What types of response did the mothers present? What was the explanation for the different types of response? What learning did the mothers demonstrate? What were the circumstances which caused a particular mother to learn something new and to change her behavior? What part did the aide have in creating the favorable circumstances? What can the aide do to reproduce these circumstances in other family situations? With her objective clearly in mind and with discussion guides in hand, the instructor should be able to accomplish a good deal at this time in developing health education skills in her students.

Summary

The role and responsibilities of the public health nursing aide in Latin America are described. The problem of improving the quality of health education carried out by the aides is defined. Policies for selection of student aides and for administration of a service program with public health nursing aides designed to promote more effective health teaching are suggested. A health education unit, within the training course for aides, having three principal parts is suggested: (1) a classroom discussion of teaching methods and principles, (2) a combination of observation visits and role playing, and (3) practice interviews and home visits with close supervision.

BIBLIOGRAPHY

Hydrick, J. L. Intensive Rural Hygiene Work and Public Health Education of the Public Health Service of Netherlands India. Batavia-Centrum, Java, Netherlands India, 1937.

McGolrick, Betty: Sutherland, Dorothy: and Arnstein, Margaret G. Handbook for Nursing Aides in Hospitals. American Hospital Association Council on Professional Practice, Chicago, Ill.: The Association, 1953.

Paul, Benjamin David, Editor. Health, Culture and Community: Case Studies of Public Reactions to Health Programs. New York: Russell Sage Foundation, 1955.

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Systematic research in home care programs is sparse. The work presented in this report is an interesting contribution to this difficult area. The role of the team and its members, together with an analysis of the problem faced by the patient, are presented in a stimulating manner.

RESEARCH IN A HOME CARE PROGRAM

Charles Perrow

Experimental or Descriptive Research?

DESPITE NUMEROUS ACCOUNTS of outstanding home care programs, there has as yet been little systematic research in this area. We do have considerable routine data on diagnostic categories, days of service, administrative organization costs and the like, and we should continue to gather this information.[1] But we also need research on the effect of programs upon patients and research on the special problems of care and rehabilitation in the home. Some valuable attempts have been made in this direction, but the choice of methodology, it would seem, has severely restricted the applicability and even the reliability of their results.

These studies have utilized experimental research technics. Patients eligible for home care are placed in a study group which receives home care or in a control group which does not, and the differences in results are measured. But the large number of crucial variables involved in home care —such as diagnosis, age, sex, severity of illness, motivation, family influence, and team attitudes—cannot be reliably controlled short of a vast number of cases which present programs are not likely to have.

Some studies have not even attempted to control the most obvious and important variable, diagnosis. In one experiment, where the patients were randomly assigned to the study and control group before they were matched by diagnosis, it turned out that 41 per cent of the study group, covering 11 diagnostic categories, had no patients with comparable diagnoses in the control group. In another instance, in a published study the findings on hospital beds "saved" and comparisons of cost of care should be taken with considerable qualification, for there is no evidence that the patients in the two groups were matched by anything except their eligibility for home care.[2]

Even where the principles of randomization are well understood, the problems of experimentation in medical care programs are considerable. In one experimental study only cardiac patients were used, thus controlling primary diagnosis in the two groups.[3] Yet even here we have a good illustration of the difficulties and limitations of this method. The data show that deaths per hundred for noncardiac diseases were twice as frequent in the study group as in the control group in the two-year period. Since the patients in the study group had far more severe illnesses of a noncardiac nature, the two groups were hardly comparable even though matched by primary

diagnosis at intake. It is unfortunate that this has been regarded by others as a "rigidly controlled" experiment and that the implications of the data on death rates were not considered.[4]

Experimental studies are likely to give an unwarranted "scientific" halo to results unless rigid conditions of experimentation and interpretation are met. On the other hand, descriptive studies admittedly lack the reliability of carefully controlled experiments, for they do not pretend to hold all but the test factor constant. However, they permit more intensive examination of the data at hand and do not require the elaborate mechanisms of control groups. Using comparatively few cases they can give weight to, or correct, general and unsystematic impressions, and they can disclose latent trends. They can also tell us much about results of care. Even an informative breakdown of condition at discharge would illuminate the routine statistics of present programs.

The San Francisco Home Care Program,[5] a community-wide demonstration program with a patient census of 30, has made a modest beginning in this direction, partly as a result of the generous research budget included in an Office of Vocational Rehabilitation grant. Despite the small number of cases and the ambiguity of many of the variables, the research has had several important results:

1. It insures a healthy and continuous self-examination of the program
2. It provides a resource for effectively presenting the program to the public
3. It provides a means for comparative studies of different programs
4. It furnishes a source of valuable information on an important though partial solution to the expanding problem of long-term illness.

Goal Analysis

One of the first requirements of descriptive studies is to order the mass of disparate data in some meaningful way. Since we are concerned with analyzing the results of the program, we evolved a simple device for categorizing patients by the goals we expect them to achieve through home care. When a patient comes on the program he is assigned a goal which represents the expected condition of the patient at discharge:

A. *Full Ambulation*—with or without prosthetic aids, not homebound.

B. *Partial Ambulation*—well enough to get to clinic without hardship, able to ambulate, but normally would be homebound or restricted to occasional outings.

C. *Increased Self Care*—homebound, with little mobility, needs clinic visits rarely and can only make them with difficulty, but rehabilitated to be capable of enough self care so that Home Care services are no longer required.

D. *Palliative*—Discharge through institutionalization, hospitalization, or death, home

Table 1—Goals for 82 patients by period of intake, January 31, 1956, to July 31, 1957

Goals	First 6 months		Second 6 months		Third 6 months		Total	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Full ambulation	2	6	5	16	8	42	15	18
Partial ambulation	12	39	5	16	3	16	20	24
Self care	4	13	9	28	1	5	14	17
Palliative	13	42	13	41	7	37	33	40
Total	31	100	32	101	19	100	82	99

care services attempting to make the patient more comfortable and preventing unnecessary complications and hospitalizations.

Staff Agreement on Goals

In the first year of operation these goals were assigned by the researcher on the basis of conference discussions of the patient. However, there was no systematic control over changes in goals, and there was no index of staff agreement on goals.

Therefore, shortly after the end of the first year a new method was introduced in conjunction with some research on patient motivation. All team members who had any contact with the patient were asked to indicate what they thought the patient could achieve. This was to be done independently, and, where possible, before the patient received a thorough discussion at a staff conference. (Patients are usually staffed within two or three weeks after coming on the program and not less than once a month thereafter.)

An agreement score was arrived at by using the number of differences between raters. In the following distribution on 43 patients there was complete agreement on the goal in 15 instances.

Table 2—Interteam agreement on goals for 43 patients

Score*	No.	Per cent	Arbitrary Label
0–0.25	19	44	High or complete
0.26–0.50	13	30	Considerable
0.51–0.75	5	12	Some
0.76–1.25	6	14	Little or none
Total	43	100	

* The method of arriving at this score is complicated. For those who are interested, it is arrived at by taking the lowest figure of difference obtainable and dividing by the number of raters, e.g., if one team member gave a patient goal A (full ambulation), two members B, and one C, the differences would be one (A to B), plus one (C to B), a total of two. Similarly, if there was one A and three C's, there would be a total of two steps of difference from the A to the C's. The score would be two divided by the four raters, this is, one-half.

Of these patients, 21 had been on the program for some time when they were rated and the rest were rated shortly after they came on. There was no more staff agreement on goals for the 21 old patients than for the 22 new ones, despite the fact that team members had a chance to come into closer agreement regarding patients who had been on the program a long time.

An analysis of the first 23 cases showed that the physical therapist was most often in disagreement with the average goal of the rest of the staff, and in six out of the 14 patients she rated, her goal was higher than any of the others. This surprised none of us, including the physical therapist, because of her enormous optimism about what patients can do if they and the team work hard enough and long enough. In some cases she ultimately proved the rest of the staff wrong. The nurses were the next group most often in disagreement with the majority of the staff, being higher in four cases, lower in three, and the same in 10. This could be explained by their relative isolation; they can visit the staff conference personally only on a rotation basis. Though a representative of the Visiting Nurse Association attends regularly, the individual nurses cannot get a seasoned view of just what the team can and cannot do for certain types of patients. The physicians assigned lower goals in six cases, higher in three, and the same as the majority in 14. The social workers were most often in agreement on these first 23 cases, but this may be due to the reluctance of one of them to assign any goals on these first patients, thus having little chance for error.

This experiment in goal judgment proved valuable to the team. It clearly indicated the consequences of the relative isolation of the nurses. It indicated that the physicians were not as pessimistic about the rehabilitation potential of patients as some of the other staff tended

to feel. And it showed that there was considerable room for disagreement. Sometimes disagreement reflected the differences in professional viewpoints. Somewhat less often it seemed to be associated primarily with a patient who showed considerable social and psychological maladjustment.

The next step, now in operation, is systematically to check changes in goals. As patients are discharged from the program, the researcher routinely reviews with the team the average of the goals they initially assigned the patient, makes sure that the degree of rehabilitation achieved is agreed upon, and thus determines the goal actually achieved. (The same procedure is carried out in the case of the ratings on motivation, to be discussed later.) In this way we will be able to review exceptional cases where there has been a considerable change, and see, for example, what characteristics are associated with highly unpredictable cases. We can also determine whether some kinds of cases are often at first, viewed more pessimistically than is necessary.

Goals and Other Variables

Goal analysis has more important functions, however, than getting a check on consensus or changes in goals. Through this meaningful categorization of patients we have been able to put the more routine statistics to better use.

As an example of this kind of descriptive research, take the association between goals and age. Home care programs for long-term illnesses have a heavy concentration of geriatric cases. Our own average age for the first year was 60, with a range of 15 to 90. Forty per cent of the patients were 70 or over. Can you do much for people this old with long-term illnesses? An analysis of goals and age shows that 32 per cent of this group had goals of full or partial ambulation. (The percentages for 10-year groupings under 70 were, respectively, 43, 36, 44, 60, and 67 for those under 30; the percentage for the total group was 40.)

Diagnostic categories also take on more meaning when we see what goals can be expected for different types of patients. Our case load in the first year was too small to permit detailed breakdown of the diagnostic categories, or of categories and severity of condition, but the following table covering the first year of operation shows what can be done with this research tool.

Full ambulation was the goal with two rheumatic fever patients, one diabetic

Table 3—Diagnostic categories and goals for 63 patients

Primary Diagnosis	Heart	Neuro-logical	Cancer	CVA	Arthri-tis	Ortho-pedic	Chest	Other	Total
Number	19	15	8	6	3	3	1	8	63
Per cent	30	24	13	9	5	5	2	13	101
Full ambulation	0	0	0	0	1	2	1	3	7
Partial ambulation	4	8	0	2	1	1	0	1	17
Self care	4	5	0	2	1	0	0	1	13
Palliative	11	2	8	2	0	0	0	3	26
Vocational rehabilitation	2	7	0	2	0	2	1	2	16

Table 4—Length of stay, by goals, for the first 17 months of the program

Goal	Discharged		Active		Total	
	Patients	Days	Patients	Days	Patients	Days
Full ambulation	5	92	7	132	12	115
Partial ambulation	14	138	9	168	23	150
Self care	8	92	4	146	12	110
Palliative	20	76	13	263	33	149
Total	47		33		80	

amputee, two orthopedic patients, one arthritic, and one with a nontubercular chest condition. Of the 19 heart cases, 14 were age 70 or over, and the goals for heart patients are predominantly palliative or self care (15 out of 19). Nevertheless, two heart patients were considered to have vocational rehabilitation potentials. The cancer patients were all terminal, but for none of our patients did their illness mean that they must be relegated to a medical-social limbo, and in almost all categories some persons can be expected to achieve a significant degree of rehabilitation.

Another use of these categories is in terms of utilization of service. All patients received medical care (averaging one visit every nine days in the first year) and social service (one visit every 11 days). But did those patients whose goal was full or partial ambulation use more of the other major services—nursing, occupational therapy, physical therapy, housekeeping and vocational counseling—than the palliative and self-care cases? Using the number of services each patient utilized (not the number of visits), we found that they did not. More services were required by patients in the self-care category than in any other. Whereas palliative patients constituted 41 per cent of the 63 patients in the first year, they used only 30 per cent of the services; the self-care patients, constituting only 19 per cent of the patients, used 29 per cent of the services. Patients in the categories of full and partial ambulation used services in proportion to their number. Only a detailed cost analysis would show whether self-care patients were actually the most expensive to care for.

Goal analysis is also useful in analyzing length of stay. After 17 months of operation the question was raised in the San Francisco Home Care Program whether we were not getting a disproportionate number of long-term palliative patients who, because of their low turnover, would eventually swamp the program. Those in this palliative category would leave the program only through death or institutionalization and thus might remain on the program for two, three, or more years. As a demonstration program with a census of only 30, and a special interest in the vocational rehabilitation potential, a swelling group of these patients would cut down our chance to experiment and demonstrate our potential with other types.

An analysis was made of goals and the length of stay for discharged and active patients during the first 17 months. When the palliative category of patients was plotted graphically, it showed three distinct groups: a small group of apparently critically ill patients who died or were institutionalized after about one month on the program (about seven per cent of all patients); another small group who died or were institutionalized after about four and one-half months (about nine per cent); and

a third group (about eight per cent) who have been on almost a year and who might continue to stay on the program much longer. This last group, the long-term home care patient, by now constituted a third of the active case load and if increased much more, could easily limit our efforts in the other directions of the program.

The figures for all the groups were interesting. While it is impossible to estimate turnover after only 17 months of operation, Table 4 shows that the self-care and the full ambulation group have much in common regarding length of stay—they are about equally short compared to the other two. The palliative and partial ambulation groups show long lengths of stay, though the discharged palliative group, the terminally ill, is quite short. The long stay of the partial ambulation category apparently associated with the difficult neurological cases. Almost one-half of the patients in this category have neurological diseases, though the neurological group contains about one-quarter of all patients on home care.

Analysis of goals was also useful in pointing out the considerable neglect that long-term patients were experiencing in San Francisco. When a patient came on the program we tried to judge what the alternative would have been for this patient had there been no home care program. This was a difficult matter to judge, but as our experience accumulated, five categories emerged.

1. *Institutionalization*—Too ill to get to an outpatient clinic under any circumstances and too ill to remain at home without intensive medical care; these patients would have needed hospitalization or nursing home care.

2. *Outpatient Department with Hardship*—Patients expected to get needed active medical care on an outpatient basis, but frequent clinic visits could only be made at detriment to their physical condition and these visits probably would not provide sufficient therapy to improve or even maintain their condition.

3. *No Service Available*—Too ill to get to a clinic and unable to afford to bring adequate medical care into the home.

4. *Prolonged Hospitalization*—Convalescence from an illness requiring hospitalization would have to be in a hospital setting, though the necessary services could be provided by a home care team.

5. *Frequent Rehospitalization*—This was a special category that best described the alternative for two patients in the first year who had had long histories of repeated rehospitalization. Preventing rehospitalization was, of course, an achievement of the program in many other cases.

In the case of the category "Outpatient Department with Hardship" of the 14 discharged by the end of the first year, eight were so seriously ill that they could avoid death or institutionalization for only about three months, on the average, and yet they would have been expected to receive their medical care

Table 5—Goals and alternatives for the first 63 patients

Goal	Institutionalization	Outpatient Department	No Service	Prolonged Hospitalization	Frequent Rehospitalization
Full ambulation	0	2	4	1	0
Partial ambulation	3	5	6	3	0
Self care	3	2	6	1	1
Palliative	11	10	3	1	1
Total	17	19	19	6	2

NOTE that the goals for over one-third of the patients who otherwise would have needed institutionalization involve rehabilitation so that home care can withdraw.

from an outpatient department in the absence of the home care program. Thus the innocuous caption for this category should not imply that these were not seriously ill patients. For the six other patients discharged in the first year in this category it took an average of about four months of concentrated service to achieve full ambulation for two of these and an average of two and two-thirds months to achieve partial ambulation for the other four so that they could get to a clinic without undue difficulty. Without home care many in this category would have deteriorated rapidly and would have been rehospitalized, institutionalized, or would have remained in a completely dependent condition at home in bed.

The "No Service Available" category presents a similar picture: Of seven who were discharged in the first year in this group, six were bedridden when they came on the program, and were receiving no substantial medical care. Their lot was to deteriorate enough to get into an institution—and of course the institutions are full. We discharged one as fully ambulatory, three as partially ambulatory, and one as capable of enough self care so that home care services were no longer required.

With such analysis, a program may get an accurate picture of what it is doing for the community, what needs doing, and get the picture in a form that is factual and concise. It is apparent from Table 5, for example, that the program was quite fully occupied with picking up neglected cases that were not even in hospitals, and that the chances for shortening the hospital stay of a patient by early discharge to home care were small. Too much else needed to be done by this community-wide program.

Motivation

Home care programs afford another important area for research by virtue of their team approach and the type of patient they serve. This is the problem of motivation in the patient. The steady increase of chronic illness makes research on motivation in the long-term patient imperative. Such a patient is likely to have much of his desire for and hope of rehabilitation sapped by a prolonged and often crippling illness. He has probably experienced the indifference of society, withdrawal from normal interpersonal relations, loss of financial resources, and perhaps the mounting strain imposed on the attending members of his family. A home care program has a special access to this kind of person and a special concern with his attitude, by virtue of their rehabilitation goal. What goes on within the team itself, the patient, and the family should be a continuing subject of research.

The importance of this became clear in the San Francisco program when there seemed to be a high proportion of patients who apparently lacked sufficient motivation to participate fully in and benefit from therapy. These were the patients who took the most staff time and interagency cooperation. They required long periods of discussion in staff conferences and were frequently reevaluated for discharge. Often it seemed that there was little agreement on what could be done for them or on how much motivation they themselves had. It also seemed that there were instances in which the family did nothing to support a patient's desire to be rehabilitated. Here were problems that might confront almost anyone dealing with chronic disease.

A short questionnaire was drawn up to query the staff members on some of these matters (this questionnaire included the questions on the goals noted in the foregoing). The first 23 sets of responses covered patients currently on the program. Thereafter the questionnaire was given out to team members a

week or two after a patient came on the program. They were not given out (or returned) in the case of very short stays. Not all responses could be used for all purposes, for various reasons. The questionnaire has now been revised to include a question aimed primarily at the physicians and physical therapists regarding the rehabilitation potential if motivation were no problem.

A copy of the revised questionnaire is shown here. Note that in the case of

Revised questionnaire for staff members

Date Filled Out:..... Patient's Name:..... .....

Staff Evaluation Sheet
San Francisco Home Care Program

(Please check appropriate designation)

Medical Director .....
Dr. A. .....
Dr. B. .....
Nurse .....
P. T. .....
O. T. .....
Social Worker .....
Coordinator .....

1. How would you rate the MOTIVATION of this patient to follow orders and to try to get well.

   Impossible to judge .....

   High .....
   Average .....
   Low .....

2. Do you think the team members can increase the patient's motivation?

   Not necessary .....

   A lot .....
   Some .....
   None .....

3. Which of the following conditions at discharge do you think are feasible for this patient, all things considered; that is, what do you think our aim should be in giving this patient care?

   Full ambulation, with or without prosthetic aids, not homebound. .....

   Partial ambulation, well enough to get to clinic without hardship, but normally would be homebound or restricted to occasional outings. .....

   Increased self care, homebound, needs clinic visits rarely, and can only make them with difficulty, but rehabilitated to be capable of enough self care so that Home Care services are no longer required. .....

   Palliative, discharge through institutionalization, hospitalization, or death, Home Care services having made the patient more comfortable and prevented unnecessary complications.

4. Do you think this goal is:

   Very feasible .....
   Feasible .....
   Feasible but will be difficult .....

5. If motivation were no problem, would the goal you checked in No. 3 as feasible be the same, or which would it be:
   Full amb. ..... Partial amb. ..... Self care ..... Palliative ..... Same .....

6. In addition, do you think that vocational rehabilitation is feasible? No ..... Yes .....

7. If feasible, is it:

   Very feasible .....
   Feasible .....
   Feasible but will be difficult .....

8. How do you think family attitudes influence the patient's motivation?

   Lives alone .....

   .....Discourage it .....
   Support it .....
   Little influence .....

Table 6—Staff judgment on motivation and influence regarding 40 patients

Patient motivation	No.	Per cent
High	24	52
Medium	13	28
Low	9	20
	46	100

Family influence	No.	Per cent
Support	18	46
Little influence	12	31
Discouragement	9	23
	39	100

Team influence	No.	Per cent
Increase	7	15
Some increase	22	48
No increase	5	11
Not necessary	12	26
	46	100
Lived alone	7	

the patient, "motivation" means to try to get well, and/or follow medical advice, thus covering the terminal cases.

The results of this limited excursion are given below. Some artifacts of the method should be mentioned. Since we started with all the patients currently on the program, the results are somewhat weighted in the direction of poor motivation. In the first 23 tabulations, representing patients who had been on for at least a month and usually several months, the results on patient motivation were High-9, Medium-7, Low-7. The results on the next 23, judged just after they came on the program, were High-15, Medium-6, Low-2. The large number of patients rated as having low motivation in the first group is due partly to the fact that there is a tendency for patients with high motivation to leave the program in a shorter time than those with low motivation.

Table 6 indicated that there were fewer patients judged to have low motivation than most team members thought. However, it did indicate that there was a core of these and that the program could expect a little less than 20 per cent of such patients in the long run. Since they tend to stay on the program somewhat longer, there may be about 28 per cent on the program at any one time.

The figures on team influence show that team members were not particularly optimistic about their influence. In 48 per cent of the cases they feel there can be only some increase, and in 15 per cent they feel they can have no effect. Nevertheless, the team members seem to judge themselves as having more influence (and probably more optimism) than family members.

The most pessimistic findings here regard the family influence. A breakdown of agreement between patient motivation and family influence shows that in 19 cases the patient and the family were "in agreement," so to speak, that is, the patient was judged to be highly motivated and the family supported this (ten cases); the patient was moderately motivated and the family gave some or little support (three cases); or was poorly motivated and the family discouraged greater motivation (six cases). In eight other cases the family's rating was higher than the patient's. But in six cases the family's rating was lower than the patient's. This last gave substance to the strong suspicion that, in some cases at least, the family was a potential block to the patient's desire to get well. Add to this the six cases where both patient and family were rated low and we have 26 per cent of all cases where there were real obstacles to overcome by the team. There are an additional three cases where the patient's motivation was low though the family's influence was at least somewhat positive.

There are not enough cases to make a comparison between goals and motivation very meaningful and one hesitates to give figures and percentages. But

Table 7—Goals and patient motivation for 43 patients

	Full Ambulation		Partial Ambulation		Self Care		Palliative	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
High	7	70	5	45	4	44	7	54
Medium	3	30	3	27	3	33	2	15
Low	0	0	3	27	2	22	4	31
Total	10	100	11	99	9	99	13	100

Table 7 shows that, as might be expected, patients with full ambulation as a goal were the most highly motivated group. However, those in the palliative category were as well motivated as the self-care group and more so than those in the category of partial ambulation. The diagnostic category again explains a lot, for the partial ambulation group contained a disproportionate number of severe neurological diseases.

In our experience, poor motivation is usually not due primarily to a defeatist attitude but rather reflects a clinging to the secondary gains of an illness. For example, a latent pattern of dependency can be activated by a period of real dependency and the gratifications may be powerful. A state of helplessness or dependency may insure that hostile family members will remain in attendance, even though it be sullen attendance. Or the patient may prefer the secure minimal activity of helplessness, with its claim for sympathy and pardon of complaints, to the considerable efforts and emotional and physical risks they feel are involved in rehabilitation. Lacking status in a youth-oriented society, older patients may cling to the status that illness gives them. Furthermore, it is apparent that for a few family members the patient is considered less trouble when inactive and immobile and the family member's anxiety about falls and other accidents is less. Where full ambulation is assured, secondary gains from remaining dependent are probably felt as less legitimate. These speculations are given some weight by the scanty data on goals and patient motivation in Table 7.

Interteam agreement on rating patient's motivation was similar to that obtained on assigning goals, though motivation, as might be expected, was somewhat more difficult to judge (or agree upon) despite the fewer categories to choose from.

As in the case of agreement on goals, it is difficult to say whether the figures represent a surprising amount of disagreement or a high amount of agree-

Table 8—Interstaff agreement on patient motivation and goals

Score	Patient Motivation		Goals for Patients		Arbitrary Label
	No.	Per cent	No.	Per cent	
0–0.25	13	29	19	44	High or complete
0.26–0.50	18	41	13	30	Considerable
0.51–0.75	6	14	5	12	Some
0.76–2.0	7	16	6	14	Little or none
	44	100	43	100	

ment. If one sees the team approach as an easy solution to integrated and continuous care, then these figures should be discouraging. If, however, one sees the team approach as a solution fraught with many opportunities for disagreement, but the best available, the figures may be encouraging.

The foregoing work on motivation is as full of difficulties in interpretation and imprecision of concepts as any modest and incidental research in this area is likely to be. The very term "motivation" (or "goals," for that matter) is bound to become a semantic monstrosity so far as research is concerned. It has different connotations for different team members, and for the same members in different cases. Furthermore, family support, team influence, and patient motivation are not equivalent concepts and the comparisons made between them here should be noted with that in mind.

Conclusion

Yet these ambiguities of research on goals and motivation are due primarily to the nature of the problems under investigation, not the type of research. Attempts to set up controlled experiments involving the important questions of results of service and difficulties of rehabilitation would only confound these problems. Descriptive analysis such as has been attempted here can tackle significant problems without the elaborate facilities that experimental research would require, such as large numbers of carefully matched patients. It can also tackle problems where there can be no feasible control group. The efforts undertaken here were meant in part to supply the program with information and to experiment with the kind of research that a home care program might sustain. In this respect they proved worth while. They will have been much more valuable if someone is stimulated by these efforts to try similar but better things in another program.

NOTE—Since this paper was submitted for publication a small but important step in coordinating research among programs has been taken. At a conference of representatives of home care programs held by the Public Health Service, the Chronic Disease Program of the Service offered to act as a clearing house for exchanging short reports, research forms, ideas, and questions on research among all home care programs.

REFERENCES

1. For two summaries see: A Study of Selected Home Care Programs. Pub. Health Monograph No. 35 (May), 1955; and Organized "Home Care" Programs in the United States. Council on Medical Service, American Medical Association (Dec.), 1956. See also: Ciocco, A., and Ring, M. D. Experience in Providing Care for the Long-Term Patient and the Light It Throws on Additional Research Needed. J. Chronic Dis. 1,4:392-411 (Apr.), 1955. The best study yet is: Organized Home Medical Care in New York City. Hospital Council of Greater New York. Cambridge, Mass.; Harvard University Press, 1956.
2. Shindell, Sidney. Preliminary Report on Gallinger Home Care Study. A.J.P.H. 43,5:577-583 (May), 1953.
3. Bakst, Henry J., and Marra, Edward. Experience with Home Care for Cardiac Patients. Ibid. 45,4:444-450 (Apr.), 1955.
4. Hospital Council of Greater New York. Op. cit., p. 267.
5. Home Care in San Francisco, San Francisco Home Care Program. San Francisco, Calif., 1956.

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The presence of mottled teeth in the inhabitants of Mecca, Saudi Arabia, is described here. This is the first report on fluorosis in this area and the author discusses the various factors involved.

MOTTLING OF ENAMEL IN MECCA AND THE ARABIAN PENINSULA—A SURVEY AND RESEARCH STUDY CARRIED OUT IN SAUDI ARABIA

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IN 1948, in Cairo, Egypt, the author noticed mottled enamel in a group of patients who came from Mecca in Saudi Arabia. This symptom of fluorine toxicosis had not been reported before in Africa and Asia except in Morocco, Tunisia, and South Africa. In March, 1954, the author was summoned to Saudi Arabia where he had the opportunity to investigate the problem.

Mecca and Its Water Supply

In a narrow valley in the Arabian Peninsula, not far from the Red Sea, lies one of the most ancient and holy cities in the world, Mecca. At the center of Mecca lies the Kaaba, the house of worship, traditionally built by Abraham in the 16th century, B.C. A few yards from the Kaaba lies the Zamzam well, the first and most ancient of the water sources in Mecca. Inhabitants of Mecca, up to the days of the famous Kalif Haroun-al-Rasheed, used to drink mainly from one canal supplied by the Zaafaran spring (apart from Zamzam, Towa, Ossman, and some other wells). That spring consisted of five branches, Honein, Mishash, Ghowirat, Thokba, and Zaafaran.

Towards the end of the 8th century, Queen Zobeida, the wife of Haroun-al-Rasheed came from Baghdad on a pilgrimage. Appreciating the difficulties encountered by the pilgrims, Zobeida introduced a new source of water from a well, 30 meters in depth, located at Mount Kara, 25 kilometers from Mecca. The water passes through the "Nuaman" on its way to Arafa Mountain, the meeting place of pilgrims, ending in "Habs el Jinn," a suburb of Mecca, in a channel built of stone; sometimes at ground level, and at others, cutting through the mountain. This was introduced to Mecca in open canals, and connected with the Zaafaran source. In the year 1950 the Royal Family conducted the water of a new spring, 55 kilometers from Mecca, to the Holy City, to satisfy the increasing demand for an adequate water supply. This was given the name of "Aziziah" after the later King Abdul Aziz Al-Saud.

Methods of Analysis

The following data were obtained: name of the person examined; age, sex, nationality; place of birth; water source; place of childhood; social class (A, B, and C); extent of mottling (brown, yellow, white, and mottling-free); ex-

tent of caries (severe, moderate, mild, and sound). The DMF (decayed, missing, filled) system was not used since filled and missing teeth were remarkably rare.

The investigation included examination of all 115 patients in King's Hospital at Zaher, 33 inpatients in Mecca Maternity Hospital, and 46 outpatients in Ajiad Hospital. In the "Missions Preparatory School" (a secondary high school) 196 were examined, comprising all the students in a number of classrooms chosen at random. The same was done with 146 students in Rahmaniah Primary School. Similarly, 37 private cases and 12 persons living in the suburbs of Mecca, but using the same drinking water were also examined. In all, 570 persons were examined. Those examined came from all classes and included both sexes.

Nine samples from the different original sources of water in Mecca and the surrounding area were collected. Samples of the mixed water drunk by the inhabitants inside Mecca were also collected. These samples were sent directly to the Chemical Laboratory in Jedda. The estimation of fluorides in the samples obtained, however, was not accurately carried out due to certain deficiencies in the equipment of the laboratory. The report only indicated the presence of fluorine "in traces" in the mixed water of Mecca. However, an official printed report of water analyses carried out in 1936 was found,[1] and it showed

Figure 1—Upper incisors showing brown and yellow mottling, longitudinal brown streaks and certain areas showing depressions. The lower incisors and canines showing white chalky patches. Note the gums.

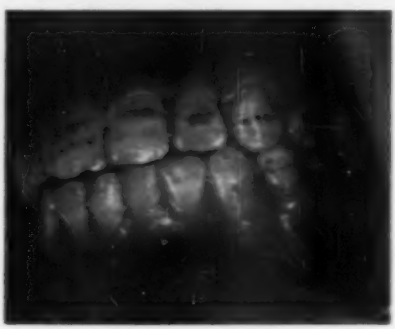

Figure 2—Shows brown mottling and depressions. Chalky white lines are seen on the upper central incisors.

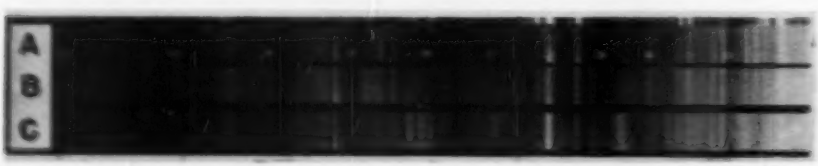

Figure 3—Spectrogram (flame) showing: A, normal enamel, B, mottled enamel and C, normal enamel to which manganese was added. The three white dots between B and C, around 2B, indicate the manganese lines in both.

the water to contain (in parts per million):

	Zobeida	Zamzam	Zaafaran
Fluorine	2	1.5	?
Iron	0.06	0.15	0.1
Manganese	Nil	Nil	Nil

Zamzam is occasionally used for drinking water, while Zobeida has been the main source for drinking water for hundreds of years until the provision of the water from the new Aziziah source in 1950.

Findings (Data)

1. The total number of the inhabitants of Mecca was estimated in 1954 to be between 300,000 and 350,000 (no accurate census was carried out).

2. The total number examined was 570, of whom 68 were females.

3. The people examined represent different classes (ranging from princes to the poorest classes), as well as different ages and nationalities living in Mecca.

4. Permanent teeth were more affected with mottling than the deciduous ones. (This was also apparent in cases where both dentitions were retained.) The finding might be attributed to the fact that fluids reaching the infant during pregnancy are filtered through the placenta. Infants in Mecca are breast fed. The mother's milk, which naturally contains a good amount of calcium, is also not expected to contain the same high concentration of fluorine. This is a point

Table 1 A—Caries among the inhabitants of Mecca

Inhabitants	Total	Caries-free	Their Per cent	Advanced Caries	Their Per cent	Moderate and Mild Caries	Their Percentage
Birth and childhood in Mecca	389	253	65.04	10	2.57	126	32.39
Other inhabitants	181	104	57.46	12	6.37	65	35.91
Total	570	357	62.6	22	3.9	191	33.5
Inhabitants showing fluorosis	408	251	61.5				
Fluorosis-free inhabitants	162	106	65.4				
Total	570	357	62.6				

B—Standard of caries in Saudi Arabia

As measured among the inhabitants of Mecca who were born outside it and spent childhood up to the age of 13 years outside it

Inhabitants	Total	Caries-free	Their Per cent	Advanced Caries	Their Per cent	Moderate and Mild Caries	Their Percentage
Showing fluorosis	29	15	51.7	0	0	14	48.3
Fluorosis-free	79	44	55.7	3	3.8	32	40.5
Total	108	59	54.6	3	2.8	46	42.6

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Figure 1—Upper incisors showing brown and yellow mottling, longitudinal brown streaks and certain areas showing depressions. The lower incisors and canines showing white chalky patches. Note the gums.

Figure 2—Shows brown mottling and depressions. Chalky white lines are seen on the upper central incisors.

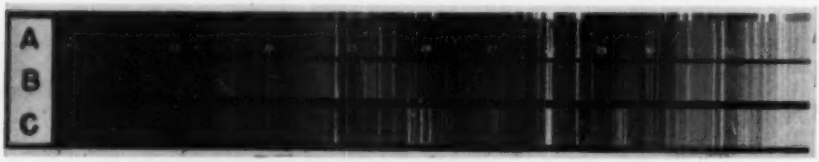

Figure 3—Spectrogram (flame) showing: A, normal enamel, B, mottled enamel and C, normal enamel to which manganese was added. The three white dots between B and C, around 26, indicate the manganese lines in both.

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Table 2—Mottling among the inhabitants of Mecca

	Range of Age Years	Total	Mottling-Free	Brown Mottling	Yellow Mottling	White Mottling	More Than One Kind of Mottling
1. Ajiad Hospital (children outpatients)	1-12	46	20	1	5	14	6
2. Rahmaniah School	5-14	146	18	6	9	62	51
3. Missions Preparatory School	13-22	196	53	30	47	25	41
4. Private cases	1.5-55	37	8	5	13	3	8
5. Mecca Maternity Hospital	12-60	33	13	3	9	1	7
6. Zaher Hospital	2-65	100	50	8	19	6	17
7. Mecca Suburbs	3-65	12	6	2	—	—	4
Total		570	168	55	102	111	134
Percentage				9.7%	17.8%	19.5%	23.5%
		100%	29.5%			70.5%	

worth further investigation. In addition, infants have a low drinking water intake. Mottling in deciduous teeth is mostly of the white-patches type, suggesting the milder condition of fluorosis. Milder cases in deciduous teeth showed only slight loss of translucency of the teeth (Table 3).

5. Few cases showed manifestations in all the teeth, but mostly the incisors were very clearly affected; upper central incisors more than laterals, and the maxillary incisors more than the mandibular incisors, labial more than lingual. In cases where all the teeth were affected, incisors usually showed brown manifestations, something rare in molars. The latter usually showed white patches or lines (suggesting an effect of light, especially in producing the brown coloration).

6. Discolorations were either deep brown, yellow, or chalky white patches. In some cases the chalky white discoloration appeared as successive lines (Figure 2).

7. Outer glaze was present in most cases. Some cases, however, showed loss of glaze, others showed marked irregularity in surface, sometimes showing some depressions over the surface (incisors Figure 1, and canines and premolars Figure 2). The glazed surface of enamel does not encourage the suggestions that foodstuffs and saliva may have any role in the creation of colors met with in mottled teeth.

8. No gross malformation was observed.

9. No abnormal attrition was observed.

10. Of the total number of cases 23.5 per cent had more than one kind of patch (Table 2). Sometimes they were at different levels. The white was usually near the incisive margin of the incisors. But in many cases different colors were at the same horizontal level, excluding the possibility of difference in the period of calcification, i.e., brown, yellow, and white patches could be formed at the same time and under the same condi-

tions. This suggests a role of the ameloblasts, and the presence of a selective action. Longitudinal brown streaks were present in some cases penetrating zones of different colors (Figure 1).

11. It was very evident in these studies that the consistency of teeth affected by fluorosis is softer than the non-fluorosed teeth. They are friable, more easily excavated and very quickly drilled. These findings should be explored further.

12. The percentage of *mottling* among the inhabitants of Mecca (Table 2) (2 ppm of fluorine in water) amounted to 70.5 per cent of the total. Among the inhabitants who were born in Mecca and spent their childhood there, the percentage amounted to 90.8 per cent in adults and 48 per cent in children (deciduous teeth) (Table 3).

This may be compared with an examination carried out in Salida, Colo.,[2] where fluorides were present (2 ppm) in drinking water. Cases presenting fluorosis amounted to 90.3 per cent of the total.

Brown stained teeth represented 9.7 per cent of the total inhabitants of Mecca, or 13.5 per cent of cases showing fluorosis (55 cases out of 402) (Table 2); this may be compared with 4.1 per cent in Salida (14 out of 338 cases affected).

13. The percentage of caries-free persons among the total inhabitants of Mecca, was 62.6 per cent (Table 1 A). This is to be compared with 55.7 per cent caries-free among the inhabitants who were born and lived their childhood outside Mecca, and did not show fluorosis. The latter figure could be considered as standard for Saudi Arabia. There is, therefore, an improvement in the ratio of 62.6:55.7, i.e., 100:89. (Table 1)

14. Sixty-two per cent of the inhabitants of Mecca were free of periodontal disease compared to 42 per cent free of periodontal disease in inhabitants who were born and spent their childhood outside it and showed no fluorosis (the

Table 3—Mottling among inhabitants born in Mecca and spending their childhood there

	Range of Age Years	Adults (Permanent Dentition)			Children (Deciduous Dentition)		
		Total	Mottling-Free	Mottled	Total	Mottling-Free	Mottled
1. Ajiad Hospital (children outpatient)	1-12	7	1	6	27	12	15
2. Rahmaniah School	5-14	107	7	100	14	8	6
3. Missions Preparatory School	13-22	150	19	131	0	0	0
4. Private cases	1.5-55	25	1	24	5	3	2
5. Mecca Maternity Hospital	12-60	16	1	15	1	0	1
6. Zaher Hospital	2-65	32	2	30	3	3	0
Total		337	31	306	50	26	24
Percentage		100%		90.8%	100%		48%

Children less than two years in age are six in all, of whom three had mottled enamel, i.e., 50 per cent.

Table 4—Periodontal diseases among the inhabitants of Mecca

Inhabitants	Total	Disease-Free	Percentage	Severely Affected	Moderate and Mild Cases
All examined	570	355	62	44	171

Standard for periodontal diseases in Saudi Arabia as estimated by condition among inhabitants born and spending childhood outside Mecca

	Total	Perio. Disease-Free	Percentage	Severely Affected	Moderate and Mild Cases
Those showing fluorosis	93	44	47	8	41
Those fluorosis-free	57	24	42	6	27
	150	68	45	14	68

standard) (Table 4). Freedom from gingival diseases clearly decreased with advancing age.

15. Signs of mottling were present in certain inhabitants who were born in the Arabian Peninsula outside Mecca and spent their childhood in their native lands up to the age of 13 years (minimum). These came from:

A—Saudi Arabia:
1. Hejaz—one case each from Rabegh and Yonboh
2. Nejd—two cases from Hail, and one each from Shakra and Dorma
3. Assir—two cases from Bani Shehr, and one each from Shemran and Nejran

B—Hadramouth:
One case each from Habban, Bijan, Yafih, Haliy, Ghorfah and Daouhan

C—Yemen:
Four cases from Taa-iz (two of whom came from its suburbs, most probably the same drinking water source)
Three from Heraz
One each from Zabeid and Sanhaa.

Discussion of Findings

Mottled enamel as seen in Mecca consists of discoloration of the enamel, which sometimes reaches the dentin. The morphology of the teeth and jaws was otherwise normal. Discoloration appeared as patches of brown, light yellow, or chalky white, usually under a glazed surface of enamel. The patches were definite areas, although the borders were not sharp, but quickly diffused away. The chalky white patches appear (under the glazed surface of the enamel) to lose completely their semi-transulcency. This is not exactly the case with the brown or yellow colorations, where translucency is maintained. (Figure 1).

The white discoloration was described in different references as *lines*, yet in the cases examined in Mecca, it was found that most of the cases showed the white discoloration in patches similar to the brown and yellow ones. Some cases showed definite successive lines of this chalky white appearance (Figure 2). It may be suggested that the white color indicates a milder condition of fluorosis than the yellow or brown. The possibility was considered that the reason for this is the increase in the amount of drinking water consumed in the hot summer, and the lesser amount drunk in the pleasant winter weather in Mecca. This, however,

did not give a satisfactory explanation, since normal, brown and white patches alternating horizontally were found at the same period of calcification.

The discoloration could be attributed, however, to a certain imbalance during calcification, *provoked by the presence of fluorine, without the latter being the direct cause of the color.* The following facts seem to support this hypothesis.

1. Sporadic cases of mottled teeth occur in districts where an excess of fluorine in drinking water is not known to occur.[5]

2. According to the chemical analysis carried out by Bowes and Murray,[4] the mottled teeth of the inhabitants of Maldon contain 0.032 per cent fluorine in the enamel and 0.073 per cent in the dentin. Had fluorine been the direct cause of mottling, the dentin should have shown the manifestation more clearly. This was not the case, since mottling usually attacks enamel, and sometimes extends to the dentin.

It has been suggested by Ockerse and Wasserstein,[6] that the stain in mottling is caused by the presence of manganese compounds in the enamel, almost excluding the possibility of the stain being related to iron which was advocated by Bowes and Murray.[4] They also expressed their suspicions that foodstuffs and saliva are causal factors. A reference was also made to a black stain in severely mottled enamel. No reference was made to the presence or percentage of fluorine in the drinking water supply of the area where specimens were taken. Nor was it shown whether drinking water was a possible source of the manganese in question.

This possibility of the stain being due to the presence of manganese was investigated, although its absence from the drinking water of Mecca was not very encouraging. Spectrographic examinations of one specimen of mottled enamel (from Mecca) and of normal enamel (from Cairo), gave favorable results with the work done by Ockerse and Wasserstein. The manganese lines (2576.1 A, 2593.7 A, 2605.7 A) (Figure 3) were quite apparent in the spectrogram of the mottled tooth B, and undetectable in the spectrogram of the normal tooth A. Spectrogram C showed normal enamel from Cairo to which manganese was added for comparison.

Conclusions

1. Fluorosis has been found in the Middle East in Mecca and probably it occurs in some other parts of the Arabian Peninsula.

2. Fluorine in water again was associated with resistance to caries; 65.04 per cent of the people of Mecca, who were born and spent their childhood there, were caries-free (Table 1 A). The percentage of the caries-free (fluorosis-free) was 55.7 per cent among the inhabitants who were born outside Mecca and spent their childhood, up to the age of 13 years in their native villages or towns (which was considered to be a standard for the condition) (Table 1 B). The ratio is therefore 65:55.7 or 100: 85.7.

3. It was found that the percentage of *caries-free* people among the inhabitants showing *signs* of fluorosis was 61.5 per cent of their total, and those caries-free showing *no signs* of fluorosis were 65.4 per cent of their total (Table 1 A).

4. Two ppm of fluorine in water caused the teeth of 90.8 per cent of adults, and 48 per cent of children to be affected by mottling (Table 3). This is not far from the results of Day[6] which showed the incidence to be 96.15 per cent and 54.35 per cent, respectively.

5. The incidence of colors found in mottling could be attributed to a process provoked by the presence of fluorine during calcification, without this being the direct cause of the color. The effect of light is a probability which might be taken into consideration as a factor in the evolution of mottling, since the

teeth and the tooth surfaces which were more exposed to light showed more severe mottling.

6. Manganese seems to be a probable cause of the brown coloration of mottled enamel, since it proved to be present in different specimens of teeth affected by mottling. Fluorine seems to exercise a "fixing" action in that respect.

ACKNOWLEDGMENTS—The author wishes to express his gratitude to His Royal Highness Prince Abdulla El Faisal, Minister of Interior, Saudi Arabia, who made this work possible; and to the Ministries of Public Health and Education, Saudi Arabia, for their kind cooperation.

REFERENCES

1. Rashid, H. H. Full Analysis of Water Collected from Mecca. Water Analysis Department, Ministry of Public Health, Cairo, Egypt, 1936.
2. Frisch, John G. Fluoride Effects on Dental Decay. J. Wisconsin Dent. Soc. 24:185–189 (Nov.), 1948.
3. Collyer, J. F., and Sprawson, Evelyn. Dental Surgery and Pathology. New York, N. Y.: Longmans, Green, 1946. p. 65.
4. Bowes, J. H., and Murray, M. M. A Chemical Study of "Mottled Teeth" from Maldon, Essex. Brit. Dent. J. 60:356, 1936.
5. Ockerse, T., and Wasserstein, B. Stain in Mottled Enamel. J. Am. Dent. A. 50:535 (May), 1955.
6. Day, C. D. M. Chronic Endemic Fluorosis in Northern India. Brit. Dent. J. 68:409, 1940.

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"Resuscitation of Newborn" Manual Now Ready

A manual on "Resuscitation of the Newborn" has been prepared by the Committee on Fetus and Newborn of the American Academy of Pediatrics. Cooperating in its preparation were representatives of the American College of Obstetricians and Gynecologists; American Hospital Association; American Public Health Association, Section on Maternal and Child Health; and American Society of Anesthesiologists. Edwin M. Gold, M.D., senior obstetric consultant, New York City Health Department, was the APHA section representative to the committee. He is also chairman of the Section's Committee on Resuscitation of the Newborn, each member of which reviewed the manual before publication.

The final document has been endorsed by these four organizations and in addition by the American Academy of General Practice, the Section on Pediatrics; and the Committee on Maternal and Child Care of the American Medical Association; the American Nurses' Association; and the National League for Nursing. The printing and make-up of the 24-page pamphlet, made possible by the Mead, Johnson Company, is an excellent illustration of the art of printing.

The manual is being distributed by the Academy to the members of the four cooperating societies. It is available on request from the American Academy of Pediatrics, 1801 Hinman Ave., Evanston, Ill.

This study reports an attempt to measure the amount of complement-fixing antigen in samples of poliovaccine removed at several stages in its manufacture, and to relate this to the immunogenic potency of the vaccine for the monkey. It is felt that this research can help to produce a more effective product.

COMPLEMENT-FIXING ANTIGENS OF LIVING AND INACTIVATED POLIOVIRUS

II. COMPLEMENT-FIXING ACTIVITY OF POLIOMYELITIS VACCINE AND ITS RELATION TO IMMUNOGENIC POTENCY

Joel Warren, Ph.D.; John D. Hare, M.D.; and Cynthia Goldman

AN IN VITRO PROCEDURE whereby the amount of antigen in poliomyelitis vaccines could be rapidly measured without recourse to animal injection might provide not only a supplementary assay of potency, but also would facilitate research on the factors of importance in the consistent manufacture of effective products.

With this in mind we have attempted to measure the amount of complement-fixing (CF) antigen in samples removed at intermediate and final stages of poliomyelitis vaccine manufacture, and to correlate this with immunogenic potency for the monkey. The premise that material responsible for immunogenic activity might be related to CF antigen is based on the observations (1) that purified live poliovirus fixes complement and its CF activity is proportional to concentration of virus;[1] and (2) that formaldehyde inactivation does not destroy the CF antigen content of purified or crude poliovirus preparations.[2, 3] However, it should be emphasized that these facts do not mean that a product containing CF antigen is necessarily a satisfactory immunizing agent but only that living and formaldehyde-inactivated poliovirus will react in the CF procedure.

The amount of antigenic material in commercial vaccines is insufficient to permit their use in practical CF procedures without further concentration. Methods were therefore required to accomplish this which would insure consistent recovery of antigen in quantities that would react with potent antisera. This has been accomplished either by ultracentrifugation or by freeze-drying of the vaccine, followed by resuspension of the concentrated antigen in a reduced volume of fluid.

Methods

The ultracentrifugation method consisted of sedimentation of vaccine in a Spinco Model L ultracentrifuge using a

No. 30 rotor at 30,000 rpm (78,000G) for 150 minutes. Each cup contained 30 ml of material, to which was added 0.3 ml of 6 per cent gelatin to give a final concentration of 0.06 per cent.[4] (On certain control lots of crude tissue culture fluids, a preliminary clarification was carried out at 2,500-10,000 rpm for 10 minutes.) The resulting pellets were resuspended by adding an amount of Hank's balanced salt solution, warmed to 37° C, calculated to give the proper concentration (usually 100X).

In the freeze-drying method, 100-ml quantities of vaccine were first dialyzed for 48 hours in the cold against two changes, 20 volumes each, of distilled water, using 24/32 or 30/32 inch cellophane casings. The dialyzed vaccine was then carefully and completely transferred to a 250-ml round-bottom centrifuge bottle fitted with a No. 6 rubber stopper through which was passed a 4-inch segment of glass tubing 15/32 inches in diameter. After shell freezing, the dialyzed fluids were lyophilized for 24 hours on an Aminco freeze-dry apparatus. No external heating was applied. After drying was complete, the vacuum was broken by opening the chamber to the atmosphere, the bottles were removed, and one ml of veronal buffered saline (VBS) was added to give 100X concentration. The residue, consisting of a small amount of dry powder, redissolved readily. All resuspended, concentrated materials were stored at −20° C until tested.

The complement-fixation test employed was based on the Kolmer method, using overnight fixation at 4° C, followed by the addition of 0:5 ml of 1.5 per cent sensitized sheep red cells and a subsequent incubation of 30 minutes at 37° C. The reactant volumes were combined in Wasserman tubes as follows: (1), 0.25 ml of twofold dilutions of concentrated antigen starting at 1:2; (2), 0.5 ml containing two full units of guinea pig complement; and (3), 0.25 ml containing 2-4 units of monovalent type-specific guinea pig antiserum. Appropriate serum and antigen anticomplementary controls were included, as well as a control overnight titration of the complement employed in the test proper, in volumes starting at 0.10 ml, with intervals of 0.05 ml.

Titration of complement was performed for each test without added antigen by using increments of a 1:30 dilution of complement (0.04 to 0.20 ml at intervals of 0.02), VBS to equal 1.0 ml, and 0.5 ml sensitized red cells. One full unit of complement as determined in this test was equivalent to the amount of 1:30 complement in the second tube above the last tube showing a trace of unhemolyzed red cells. Two full units therefore equalled twice this amount of 1:30 complement.

Sensitized red cells were prepared by mixing an equal volume of 3 per cent sheep erythrocytes preserved in Alsever's solution and washed three times in VBS before use, with an equal volume of an appropriate dilution of hemolysin to contain one unit per ml.

All dilutions were made in veronal buffered saline. Two plus or greater fixation was regarded as positive. Additional details of the CF method can be found in an accompanying paper.[5]

Preparation of Antisera

Groups of guinea pigs, weighing approximately 350 gm, were immunized with monotypic poliovirus.[6] The antigen consisted of crude undiluted infectious tissue culture fluid from HeLa cell cultures grown in Eagle's basal medium containing 10 per cent horse serum. Individual sera were titrated for CF antibody as in the foregoing and then pooled and stored at −20° C. Typical mean CF antibody levels were: for Type I, 1:64; for Type II, 1:128; and for Type III, 1:32.

Results

CF Antigen Content of Centrifugally Concentrated Virus and Vaccine

In order to establish whether the recovery of CF antigen in the centrifuge method was directly proportional to the concentration factor, a series of experiments were performed with live Type II (MEF1) virus in monkey kidney tissue

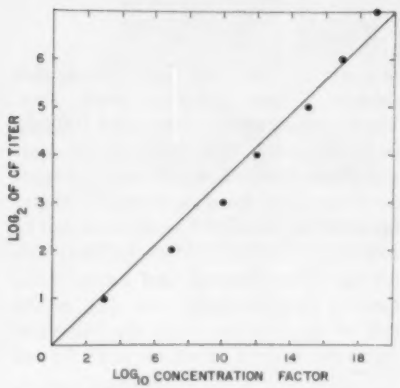

Figure 1—Correlation between concentration factor and CF titer of poliovirus sedimented at 30,000 rpm for 30 minutes

culture fluid in which the pellets were resuspended to different volumes and their CF titers determined. As seen in the plot in Figure 1, the proportionality between final concentration and CF titer approached 1:1. Reproducibility of the procedure was determined by separately centrifuging 10 aliquots of a single lot of commercial vaccine and titrating each resuspended pellet. The end points were identical for each aliquot.

Comparative Efficiency of the Centrifugal and Freeze-Dry Methods for Vaccine Concentration

Most of the CF tests on vaccines were performed with centrifugally concentrated materials. However, because of its simplicity and its ability to retain sedimentable as well as possible soluble viral protein,[8] a dialysis freeze-dry process seemed preferable. Using three trivalent and one monovalent vaccines, a comparison of the CF titers for Type II virus obtained after concentration by both methods indicated drying to be as good as, and possibly superior to, the centrifuge method. Supportive data for this are shown in Table 1. Vaccine 1A had identical titers in 11 repeated specimens concentrated in the centrifuge.

Concentration Factors Required for Commercial Vaccines

The extent to which it was necessary to concentrate commercial (1955-1956) vaccines required investigation. In a series of studies using six vaccines, concentrations varying between 30 and

Table 1—Type II CF antigen content of poliomyelitis vaccines concentrated 100X by sedimentation or dialysis and drying

Vaccine	Type	Concentration by Sedimentation	Concentration by Drying
1A	Trivalent	1:4*	1:4–1:8†
1B	"	ND	1:4
2	"	ND	1:2
3	Monovalent	1:32	1:64

* Eleven repeated sedimented samples tested.
† Three repeated dried samples tested.

Table 2—Reactivity of crude and concentrated poliovaccines with immune monkey and guinea pig sera

Vaccine		Antigen Dilution	
		Type I Immune Monkey–6 Units	Polyvalent Immune G.P.–4 Units
D	Original	0	0
	157X	0	1:4
E	Original	0	0
	157X	1:4	1:8
F	Original	0	0
	157X	1:4	1:4

157X were tested for CF antigenicity against monkey and guinea pig antisera. Results of a typical experiment are shown in Table 2. Similar experiments indicated that while more potent lots would fix complement at about 30X, and others of higher than "normal" potency would fix complement at lower concentrations, many vaccines which had passed the monkey potency assay as defined in the "Minimum Requirements for Poliomyelitis Vaccine" [6] required greater concentration. On the basis of this, and because of practical limitations, a standard concentration factor of 100X has been adopted as routine for the CF assay of poliomyelitis vaccines. Such antigens are generally not anticomplementary and can be stored at −20° C without detectable loss of activity.

Antigen Content of Monovalent Fractions During Process of Manufacture

Since crude infected tissue culture fluids can be used as CF antigens directly,[7] whereas vaccines require considerable concentration before they will react, it seemed likely that some loss of antigenic material occurred during the process of poliomyelitis vaccine manufacture. Through the generous cooperation of two pharmaceutical companies, a series of fractions were made available which had been removed from Type II virus pools at different stages of vaccine processing. All lots had comparable infectivity titers prior to inactivation. The fractions were concentrated 100-fold in the ultracentrifuge and their CF antigen titers determined. Table 3 provides an example of the data obtained. Manufacturer A submitted samples from 11 monovalent pools, (1) immediately following Seitz filtration and before addition of formaldehyde, and (2) at the end of inactivation. All the live virus fractions had CF titers of 1:4-1:8, and after inactivation, titers of 1:2-1:4. Manufacturer B submitted a series of samples on two different lots at comparable stages, and these had considerably more CF antigen at both pre- and postinactivation stages. It can also be seen that in the case of both producers

Table 3—Type II CF antigen content of poliomyelitis vaccine fractions concentrated 100X

Manufacturer	Fraction	CF Titer
A-1 to A-10	Postfilter, live	1:4-1:8
	End inactivation	1:2-1:4
B	Prefilter, live	1:128
	Postfilter, 4 days HCHO	1:32
	End inactivation	1:32
B-1	Prefilter, live	1:64
	Postfilter, 4 days HCHO	1:64
	End inactivation	1:32

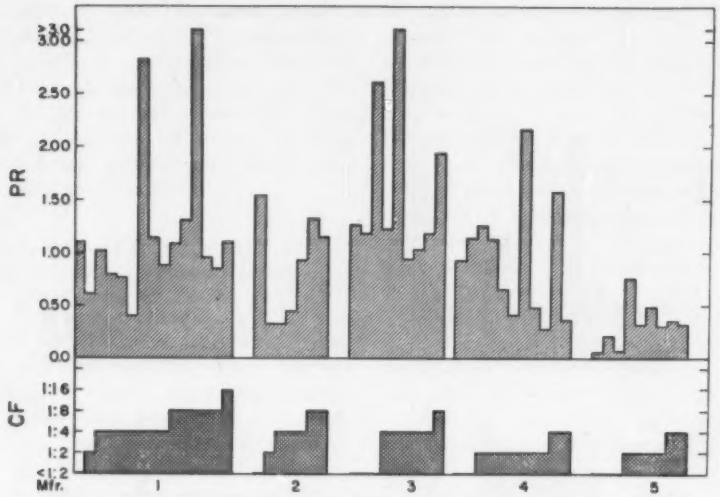

Figure 2—Type I CF antigen content and monkey potency ratio for commercial poliomyelitis vaccines

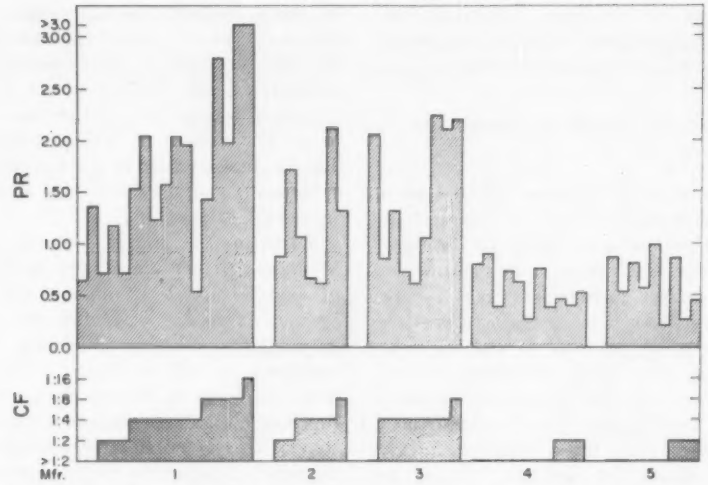

Figure 3—Type II CF antigen content and monkey potency ratio for commercial poliomyelitis vaccines

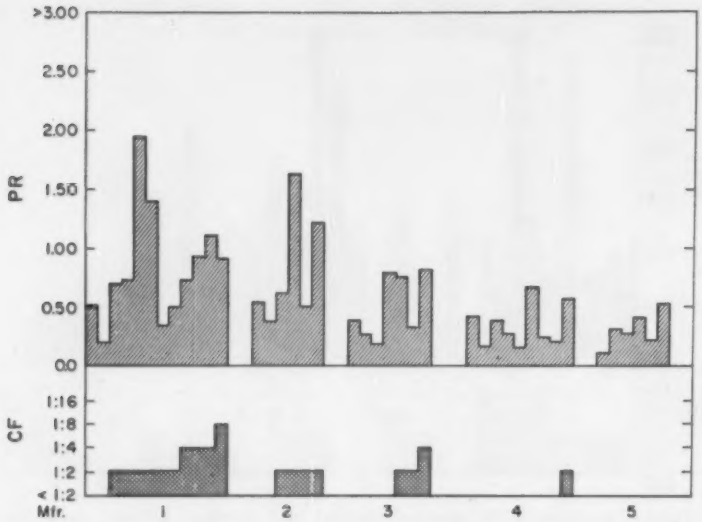

Figure 4—Type III CF antigen content and monkey potency ratio for commercial poliomyelitis vaccines

there was approximately a twofold loss of CF antigen during the processing of poliomyelitis vaccine. Attempts are being made to relate loss of antigen to specific manufacturing procedures.

CF Antigen Content of Commercial Vaccines

A total of 67 vaccines selected on a random basis have been concentrated by centrifugation and their CF antigen titers for each virus type determined. These and the monkey potency ratios for 52 lots from five manufacturers are shown in Figures 2, 3, and 4. The potency tests were performed in accordance with the "Minimum Requirements for Poliomyelitis Vaccine,"[4] and the ratios* are those obtained by the manufacturer for each lot. It can be seen that the CF titers tend to be highest in those products having elevated potency ratios. This correlation appears best for Type III, poorest for Type I. Figure 5 illustrates the CF antigen titer for each type in a representative group of 24 vaccines. Reprocessed lots numbered 4 and 5 of Manufacturer No. 1 were of interest in that they had little or no CF antigen at 100X, suggesting that the steps involved in the reprocessing or repooling of these lots may have removed CF antigen.

When the CF antigen concentrations of these vaccines are plotted according to manufacturer, they tend to fall into groups. Products of Manufacturers 1, 2, and 3 gave a higher percentage of CF reactions, as well as higher CF levels, than did those of Manufacturers 4 and 5. These results indicate that the absence of a CF titer of 1:2 in 100X concentrated vaccine is associated with lower monkey-immunizing potency.

To obtain a more conclusive relation between immunizing potency and CF antigenicity, we measured the antigen content of eight additional vaccines on

* The ratio of the geometric mean titer of neutralizing antibody in vaccinated monkeys to the titer of an N. I. H. reference serum.

which both monkey and chick potency test data were available. Unfortunately, there was such disagreement between assays of a given product in each of these two species that a more definitive association between CF antigen content and the ability to elicit antibody in animals could not be made.

Dissociation of CF Antigenicity and Immunogenicity of Poliomyelitis Vaccine Following Freeze-Drying

Some data have recently been obtained which suggests that the ability of poliomyelitis vaccine to fix complement with antisera may be retained even after infectivity and immunogenic potency have been lost. This occurred when two lots of vaccine were tested for their ability to stimulate neutralizing antibody in chicks before and after these lots were dried from the frozen state as described in the foregoing.* Each lot of vaccine was administered to seven day old chicks at three different dilutions, using 15 chicks per dilution. One ml was given on days 1 and 14, and the animals bled on day 21. The number of chicks developing neutralizing antibody for each virus type to a titer of 1:16 or greater was determined by using the metabolic inhibition procedure of Salk et al.[5] The CF antigen content of 100 X concentrated vaccine was also measured in both lots, but only following freeze-drying. As seen in Table 4, the concentrates of both products fixed complement following lyophilization. Vaccine BB exhibited higher CF levels than did Vaccine AA. However, although both vaccines in the original fluid state were able to elicit a good antibody response in chicks, practically all immunogenic activity was destroyed by the process of dialysis and freeze-drying. These findings indicate that the ability to fix complement is retained by poliomyelitis vaccine after it has lost its immunizing capacity for animals.

* We are indebted to Drs. J. Crawford and G. Hottle for this potency test data.

Conclusion

Inactivated poliomyelitis vaccines contain one or more CF antigens fixing complement in the presence of guinea

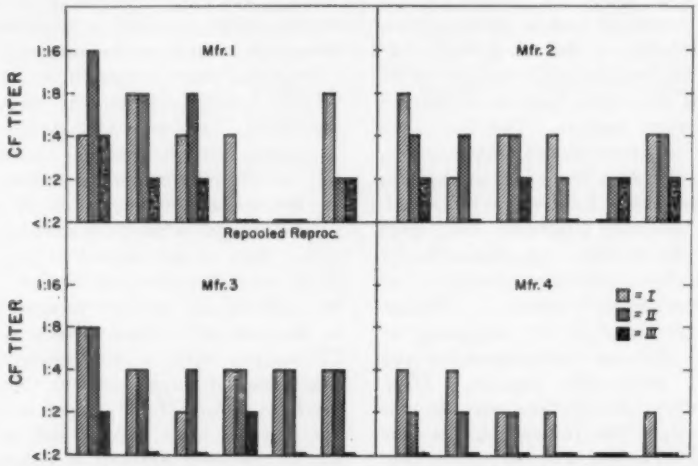

Figure 5—CF antigen titer of 100X concentrated poliomyelitis vaccines

Table 4—CF antigen content and chick potency levels as measured by neutralizing antibody response to vaccine before and after freeze-drying

Vaccine	Virus Type	Content of CF Antigen	Vaccine Dilution Inoculated into Chicks Undiluted	1:10	1:100	ED 50
AA	I	ND	14/15*	7/15	0/12	7.6
Predry	II	ND	15/15	12/15	1/12	26.3
	III	ND	13/15	6/15	1/15	6.3
AA	I	1:4	3/14	0/15	0/15	<1.0
Postdry	II	1:2	7/14	0/15	0/15	1.0
	III	1:2	0/14	0/15	0/15	<1.0
BB	I	ND	14/15	11/15	2/15	22.7
Predry	II	ND	15/15	15/15	4/15	48.5
	III	ND	14/15	12/15	2/15	26.2
BB	I	1:8	3/15	10/15	1/15	<1.0
	II	1:4	0/15	0/15	0/15	5.7
	III	1:16	0/15	0/15	0/15	<1.0

* Number developing a neutralizing antibody (1:16 or >) over number inoculated.

pig and other antisera. Antigen is present in highest concentration in crude, infectious tissue culture fluids, and it decreases during the process of manufacture, so that the final trivalent product contains only a fraction of the original content. Even though the infectivity titers are of the same order of magnitude, lots from the various manufacturers differ in the amount of CF antigen contained in their starting virus.

The relation of the CF antigen content to the immunogenic capacity of inactivated poliovirus may be considered from several aspects. The live virus particle is infective and immunogenic, and it will readily react with antibody to fix complement. Inactivation by formaldehyde destroys infectivity but leaves most of the antigenic capacities reflected in neutralizing antibody stimulation or complement-fixation reactivity. Freeze-drying, as noted in the foregoing, or heating[9] destroys immunogenicity and only CF antigenicity remains. These immunologic degradations may be correlated with the information on the physical organization of the particle provided by studies of irradiation sensitivity performed by Benyesh, et al.[10] These authors found that the diameter of the radiation-sensitive area of the poliovirus particle was responsible for infectivity characteristics between 27 and 30 mu (with electron, alpha particle, or deuteron bombardment), whereas the diameter of the CF locus (or loci) sensitive to radiation was only 7 mu. The smaller area may be connected in some fashion with its relative resistance to those agents cited in the foregoing.

Applying these considerations to the relation between CF antigen content of present-day vaccines and their potency, it appears that the residual amount of CF antigen reflects, and is proportional to, the original concentration of undegraded antigen in the crude starting virus rather than to the amount of immunogenic material in the final vaccine. Thus, in applying CF antigen measurements to the assay of vaccine potency, a high CF antigen value is not necessarily a guarantee of high potency, whereas products devoid of CF antigen in 100X concentrates have been found to fall within the lower brackets of potency as measured by current animal procedures

The available data are sufficiently suggestive to warrant further investigation. The measurement of the CF antigen content of monovalent fractions selected during various stages of processing might provide information as to the desirability of pooling certain lots into trivalent vaccine. Data are needed on the effects of various methods of filtration, inactivation, storage, and preservation on CF antigen content. These may prove of considerable value in the continuing search for a more potent product.

Finally it must be established whether the CF antigen content is related to the ability of a vaccine to prevent human poliomyelitis, and if it is, what amount is desirable or necessary to achieve this.

Summary

The complement-fixing antigen content of poliomyelitis vaccines has been investigated as a possible in vitro potency assay. Following concentration, sufficient antigen is present in most vaccines to react with potent guinea pig antipoliovirus sera. There appears to be a rough relationship between antigen titer and a vaccine's immunogenic potency for the monkey.

REFERENCES

1. Mayer, M.; Rapp, H. J.; Roizman, B.; Klein, S. W.; Cowan, K. M.; Lukens, D.; Schwerdt, C. E.; Schaeffer, F. L.; and Charney, J. Purification of Poliomyelitis Virus as Studied by Complement Fixation. J. Immunol. 78:438, 1957.
2. Charney, J.; Fisher, W. P.; and Machlowitz, R. A. Preparation and Formaldehyde Inactivation of Pure Poliovirus. Federation Proc. 16:409, 1957.
3. Black, F. L., and Melnick, J. Appearance of Soluble and Cross Reactive Complement-Fixing Antigens on Treatment of Poliovirus With Formalin. Proc. Soc. Exper. Biol. & Med. 89:353–355, 1955.
4. Baron, S. Ultracentrifuge Concentration of Poliovirus and the Effect of Calf Serum and Gelatin. Ibid. 95:760–764, 1957.
5. Hare, J. D., and Warren, J. Complement-Fixing Antigens of Living and Inactivated Poliovirus. I. Complement-Fixing Antibody Response of Laboratory Animals to Poliovirus. Am. J. Hyg. (In press.)
6. National Institutes of Health, Public Health Service. Minimum Requirements: Poliomyelitis Vaccine. (1st Rev., Apr. 12, 1955, mimeo.) Paragraphs 4.6–4.8. Washington, D. C.: U. S. Dept. Health, Education and Welfare.
7. Black F. L., and Melnick, J. L. The Specificity of the Complement Fixation Test in Poliomyelitis. Yale J. Biol. & Med. 26:385–393, 1954.
8. Salk, J. E.; Youngner, J. S.; and Ward, E. N. Use of Color Change of Phenol Red as the Indicator in Titrating Poliomyelitis Virus or Its Antibody in a Tissue Culture System. Am. J. Hyg. 60:214–230, 1954.
9. Melnick, J. L. Unpublished data, 1957.
10. Benyesh, Matilda; Pollard, Ernest C.; Opton, Edward M.; Black, Francis L.; Bellamy, W. Dexter; and Melnick, Joseph L. Size and Structure of ECHO, Poliomyelitis, and Measles Viruses Determined by Ionizing Radiation and Ultrafiltration. Virology, 1958. (In press.)

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Portions of this paper were presented before the Laboratory Section of the American Public Health Association at the Eighty-Fifth Annual Meeting in Cleveland, Ohio, November 15, 1957.

Knowledge of the hazards involved in the use of organic phosphate insecticides under ordinary working conditions is needed. This study, carried out in Louisiana, endeavors to provide some information on this problem.

ORGANIC PHOSPHATE INSECTICIDES—A SURVEY OF BLOOD CHOLINESTERASE ACTIVITY OF EXPOSED AGRICULTURAL WORKERS IN LOUISIANA, 1957

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LARGE AMOUNTS OF the organic phosphate insecticides are used to treat various crops in the United States. Many of these insecticides are extremely toxic to man and must be handled with caution to avoid accidental poisoning. The manufacturers of these organic phosphate insecticides are well aware of the toxic potential of these agents and have constantly emphasized this to the users of their products. The educational service provided by industry has been carried out by detailed labeling of the containers in which the organic phosphates are marketed, by means of bulletins and brochures, and via representatives whose business it is to contact users and explain to them the toxic nature of these insecticides. All of this is evidence of a sense of public health responsibility on the part of the chemical industry.

Various governmental agencies have, of necessity, been concerned about the use of these organic phosphate insecticides. The Public Health Service has been extremely active, both in the collection and study of case reports of individuals accidentally poisoned by these insecticides, and in research regarding the manner of exposure and the degree of toxicity to man of various members of the organic phosphate group. State and local health departments have been interested contributors to the accumulating data concerning the toxicity of these agents for human beings. The World Health Organization for several years has had a study group working in this field,[1] an indication of the international scope of the problem.

The actual danger to individuals during the manufacture of the organic phosphates has been explored by many. Numerous cases of accidental poisoning in man have been reported. It is not our intention to review this extensive literature; a paper reviewing these and other aspects of organic phosphate insecticide poisoning has recently been published.[2] Excellent studies of the dangers to the users of these insecticides have been carried out by special groups under varying circumstances.[3-6] To our knowledge no study has been made on a level that might give some real indication of the hazard to users under ordinary working conditions.

The lack of such data has hampered the widespread introduction and use of the organic phosphate insecticides in the cotton-producing areas of the southern states. This has led to two opposite but equally unreal points of view with which we have had to contend in Louisiana. At one extreme, certain of the handlers of these insecticides had little appreciation of the true hazards involved in the mixing and application of these insecticides. At the other, a considerable number of persons were so frightened by the toxic potential of the organic phosphates that they not only refused to use these agents but also criticized and attempted to block their use by others, to the detriment of their crops and resulting in the actual development of small centers of "localized hysteria." During the cotton crop treatment season of 1957 in the state of Louisiana, a joint program was developed by the Louisiana State Department of Health, the Louisiana State University Extension Service, and the Louisiana State University School of Medicine. The program as carried out during the single cotton-growing season is detailed in the following.

During the 1957 season, a large quantity of organic phosphate insecticides was sprayed or dusted upon the cotton fields in Louisiana. Completely accurate figures of the amount of these insecticides applied are not available. However, a usage estimation has been made and Table 1 indicates the total number of pounds of dust and gallons of liquid used. The actual number of agricultural workers employed in the application of these insecticides is not known. Certainly thousands of individuals by virtue of their occupations as crop-dusting pilots, farmers, field entomologists, tractor drivers, and the like are exposed from time to time to organic phosphate insecticides.

The toxic effect of the organic phosphate insecticides is paralleled by a drop in the activity of the cholinesterase system of the body. Readily available for measurement are the cholinesterases of the blood. The enzymatic activity of the true or red blood cell and the pseudo or plasma cholinesterase are subject to laboratory determination. The effect of the toxic organic phosphate insecticides makes it possible to discern subclinical cases of poisoning, since a considerable depression of the normal levels of the blood cholinesterases are seen before the symptoms of intoxication appear. This early drop in the cholinesterase levels following exposure to these agents can be used as a basis for screening individuals for possible organic phosphate exposure.

Such a screening system could be of use in several ways. It could provide a warning of subclinical poisoning so that the worker could avoid contact with the organic phosphates until his cholinesterase activity had returned to normal. It could serve as an indication of faulty

Table 1—Utilization of organic phosphate insecticides for Louisiana, 1957

Dusts	Pounds of Dust	Pounds of Pure Material
Methyl parathion, 5%	445,100	22,255
2.5%	608,650	15,216
Parathion, 1%	746,952	7,470
Malathion, 10%	30,350	3,035
5%	45,474	2,274
4%	28,750	1,150

Liquid	Gallons of Concentrate
Methyl parathion	128,528
Parathion	130
Malathion	29,065
Guthion	5,250
Demeton	18

NOTE—These figures represent the best estimate available of the actual quantities of insecticides used (courtesy of K. L. Cockerham, Louisiana State University Extension Service).

handling of these toxic agents. These faults might then be uncovered and corrected before an instance of severe poisoning occurred. Furthermore, a screening program applied to a group might be used to assess the actual morbidity (and mortality) associated with the handling of organic phosphate insecticides. It was with these objectives in mind that the screening program reported here was instituted.

Method

Selection of Individuals to Screen

Inasmuch as laboratory facilities were limited, the decision was made to examine blood samples from those agricultural workers who might be most exposed in their work to the organic phosphate insecticides. Initially this included crop-dusting pilots, field entomologists (crop insect checkers), tractor drivers who engaged in crop dusting, and mixers who prepared and diluted the insecticide concentrates. As the season progressed, samples of the blood of farmers and other agricultural workers were also analyzed. A weekly blood analysis was offered free of charge to these various workers.

Mechanism for Collecting Blood Samples

The Parish (county) Health Units of the Louisiana State Department of Health took venous blood samples from individuals in the various occupational groups. The blood was prevented from clotting with an anticoagulant and was shipped by parcel post to the Louisiana State University School of Medicine for analysis of its cholinesterase activity.*

Analytical Procedures

Inasmuch as the blood samples from the agricultural workers were collected far from the laboratory, and because the samples were shipped under varying conditions, a method was sought by which the red blood cell cholinesterase level could be determined using whole blood. It was essential that a system of analysis be used that would be adequate in the presence of hemolysis and small clots and where the blood had been anticoagulated with various substances. The method employed was that of Fleisher and Pope[6] with modifications previously reported.[7] Experience in our laboratory indicated that this method was satisfactory for use under such circumstances[8] for analysis of whole blood where no clots were present in the specimen, or for analysis of red blood cell activity where clots were found. However, the anticipated number of blood specimens was large and a more simple method for screening whole blood for cholinesterase activity was desirable. The method of Fleisher, Woodson, and Simet[9] was selected because of its simplicity. At the beginning of the season, all blood samples were analyzed by both methods; later, as confidence increased in the screening method, the samples were subjected to analysis by that method alone and if results were equivocal, the Fleisher and Pope method was used to check the screening method. Our data concerning this system of screening whole blood for cholinesterase activity is to be reported elsewhere.[10]

Reporting of Results of Analyses

No report was made to the individual if the cholinesterase activity of the blood sample was considered to be within normal limits. In the event of a lowered cholinesterase level, the individual submitting the sample was to be notified directly so that further exposure to the organic phosphates could be avoided.

Study of Cases of Poisoning

Each suspected case of poisoning that was reported to us was investigated by

* In this institution the senior author maintained a laboratory partially supported by U. S. Army Chemical Corps Contract DA-18-108-405-CML-37.

one of our group. This study consisted of a history taken from the individual, an analysis of cholinesterase activity of his blood, and an inspection of the place where the poisoning was thought to have occurred. Cases were reported to us by individual physicians, Parish Health Units, county agents, and others, all of whom had been alerted to the possibility of such poisonings. Two years of preliminary field work, numerous lectures to professional and lay groups, and newspaper publicity all contributed to knowledge of the work in progress and helped establish a habit of reporting suspicious cases to us.

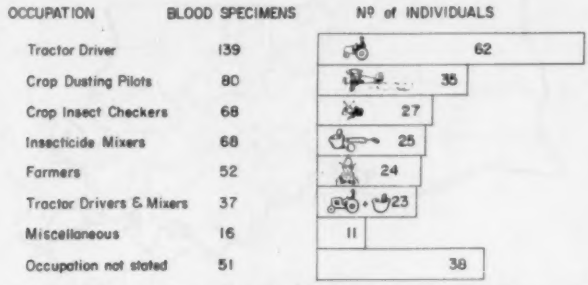

Figure 1—Occupational classification of individuals submitting blood specimens for cholinesterase determination

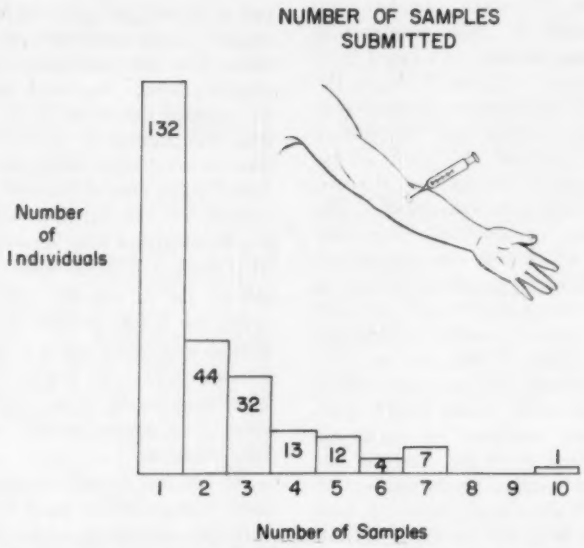

Figure 2—Number of blood specimens per individual analyzed for cholinesterase activity

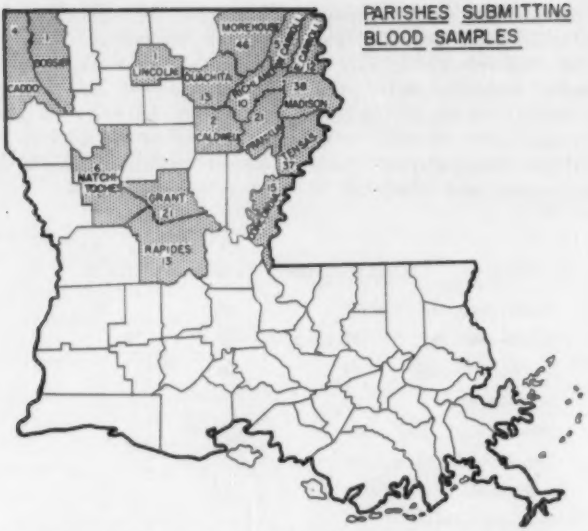

Figure 3—Numbers of individuals from each parish that submitted blood specimens for cholinesterase determinations

Results

A total of 511 blood samples were received during the 1957 crop-dusting season. These samples were taken from 245 individuals. Figure 1 shows the occupational classification of those submitting blood samples and the number of samples submitted by each group. Figure 2 indicates the number of specimens submitted per individual. The total number of analyses performed was 640, of which 452 were carried out by the whole blood screening technic of Fleisher, Woodson, and Simet, and 188 by the colorimetric method of Fleisher and Pope. Figure 3 indicates the number of individuals who submitted blood specimens via each Parish Health Unit.

The largest numbers of specimens were submitted from the areas of the most intense cotton production. The first 150 blood samples received were analyzed by both the screening technic and the colorimetric method of Fleisher and Pope. In the remaining 361 instances, only the bromthymol blue (B.T.B.) screening technic was used unless the sample appeared to have a decreased blood cholinesterase activity, in which case the colorimetric method was also employed. Inasmuch as there were no samples submitted from individuals who complained of symptoms or who showed overt signs of organic phosphate intoxication, we presumed that there were no false negatives as determined by the bromthymol blue screening technic. This method depends upon the time required for a suitable pH change to cause the B.T.B. present in the experimental system to reach a known comparable color. By arbitrarily selecting 25 minutes as the upper limit of normal, there were approximately 3.3 per cent false positives.

Of all the blood samples analyzed, none was found to have cholinesterase activity considered to be significantly depressed below normal. Table 2 shows the results of all determinations, ar-

Table 2—Cholinesterase activity of blood samples listed by groups according to occupation

Occupation	No. of Individuals	Method of Fleisher, Woodson, and Simet (Bromthymol Blue) Whole Blood			Method of Fleisher and Pope					
					Whole Blood			Red Blood Cells		
		No. Run	Average	Range	No. Run	Average	Range	No. Run	Average	Range
Tractor drivers	62	125	13.8†	5-28†	40	2.49‡	1.14-3.18‡	4	2.05‡	1.44-2.77‡
Crop-dusting pilots	35	66	13.2	5-30	29	2.51	1.45-3.14	6	1.99	1.49-2.40
Crop insect checkers	27	63	15	6-28	25	2.42	0.62-3.18	1	2.81	—
Insecticide mixers	25	57	12.6	2-29	19	2.58	1.22-3.15	6	1.58	0.84-1.86
Farmers	24	50	16.2	7-90	7	2.21	1.67-2.74	—	—	—
Tractor driver-mixers	23	36	14.2	5-25	10	2.50	1.85-3.04	5	2.08	1.44-2.57
Miscellaneous	11	10	14.3	4-27	8	2.54	1.45-3.11	3	1.51	1.27-1.58
Occupation not stated	38	44	15.2	6-35	17	2.28	1.59-2.64	5	2.04	1.86-2.28
Normal*	—	—	—	—	—	2.31	0.78-3.88	—	1.47	0.54-2.38

* As determined in senior author's laboratory.
† Minutes required to reach standard pH.
‡ Micromoles of acetylcholine hydrolized.

ranged by occupation groups. The Fleisher and Pope determinations were performed on whole blood or on red blood cells. The normal values as listed for these two analyses by this colorimetric method are those determined in the senior author's laboratory over a period of two years preceding the start of the work reported here.

Several cases of suspected organic phosphate insecticide poisonings among agricultural workers were reported to us. Upon investigation, it became apparent that only four cases actually satisfied our criteria of organic phosphate poisoning. These cases are very briefly summarized in Table 3. For purposes of comparison, the instances of poisoning reported to us in 1956 are listed in the same table.

Table 3—Cases of proved organic phosphate insecticide poisoning among agricultural workers in Louisiana, 1956-1957

Occupation	Exposed to
1956, six cases	
Field Hand	Methyl parathion
Field Hand	Parathion
Field Hand	TEPP
Pilot	Methyl parathion
Pilot	Parathion
Pilot	Parathion
1957, four cases	
Mixer	Multiple organic phosphates
Factory Worker	Methyl parathion
Factory Worker	Methyl parathion
Factory Worker	Methyl parathion

NOTE—All these cases were hospitalized and recovered completely following adequate therapy.

Discussion

It is interesting that there were no instances of subclinical poisoning detected by analysis of the blood specimens submitted by the various agricultural workers. This was certainly contrary to expectation, for the organic phosphate insecticides were handled by individuals with varying degrees of caution. In our surveys of the manner of dealing with these toxic agents, it was noted that some persons took no special precautionary measures, and the opportunity for severe exposure and resultant poisoning was great.

The number of cases of poisoning among agricultural workers by these insecticides totaled four in the state of Louisiana during the 1957 cotton crop spraying season. Of course, not all cases of such poisoning may have come to our attention. However, the fact that the State Department of Health and the Louisiana State University School of Medicine were known to be actively concerned about cases of poisoning due to the organic phosphate insecticides tended to attract reports to us.

We are aware that we cannot calculate what percentage of the total population of agricultural workers we have studied by means of the blood cholinesterase activity determinations. Those studied must represent but a fraction of those exposed to the organic phosphate insecticides. Nevertheless, the sample is of interest because it represents a population which submitted blood specimens on a purely voluntary basis. Presumably, those who participated in the program were those most concerned about the dangers of handling toxic insecticides. Therefore, the study population may be composed of those who normally would take greater precautions in handling dangerous chemicals than those who did not participate. Had blood samples from those who did not participate been analyzed for cholinesterase activity, it is possible that other cases of subclinical poisoning might have been detected.

Despite such speculation concerning the nature of the sample population, it was gratifying to us not to have encountered any instances of subclinical poisoning with the organic phosphate insecticides as shown in our study. Also, the small number of cases of overt poisoning is reassuring to us as it must be to all who handle these toxic agents in the course of their work. We hope that this study will be of interest and use to others who have long been concerned with an assessment of the actual danger of handling the organic phosphate insecticides.

Summary

Blood specimens from 245 farmers, crop-dusting pilots, crop insect checkers, insecticide mixers, tractor drivers, and other agricultural workers were analyzed for blood cholinesterase activity during the 1957 cotton crop treatment season in Louisiana. No instance of subclinical organic phosphate insecticide poisoning was discovered in this survey, although all persons contributing blood samples were exposed in varying degree to these toxic agents. During this same season, only four cases of proved overt organic phosphate poisonings were encountered among agricultural workers in Louisiana.

ACKNOWLEDGMENT is made for the help and encouragement given by K. L. Cockerham and L. D. Newsom of the Louisiana State University Extension Service and for the assistance of the Louisiana State Department of Health Parish Health Units.

REFERENCES

1. Toxic Hazards of Pesticides to Man. World Health Organization Tech. Rep. Series, No. 114 (Oct.), 1956.
2. Barnes, J. M. Advances in Pest Control Research. New York, N. Y.: Interscience Publishers, 1957.
3. Sealey, L. J. Organic Phosphate Study, Summer, 1951. Environmental Research Laboratory, University of Washington. Seattle, Wash.: The University, 1951.

4. Braid, P. E.; Windish, J. P.; and Rose, C. R. Parathion Spray Concentrations and Residues in Quebec Apple Orchards. Arch. Indust. Health 11: 408-412, 1955.
5. Culver, D.; Caplan, P.; and Batchelor, G. S. Studies of Human Exposure During Aerosol Application of Malathion and Chlorthion. Ibid. 13:37-50, 1956.
6. Fleisher, J. H., and Pope, E. J. Colorimetric Method for Determination of Red Blood Cell Cholinesterase Activity in Whole Blood. Arch. Ind. Hyg. & Occup. Med. 9:323-334, 1954.
7. Petty, C. S.; Lovell, M. P.; and Moore, E. J. Organic Phosphorus Insecticides and Post-Mortem Blood Cholinesterase Levels. J. Forensic Sciences 3:226-237, 1958.
8. Petty, C. S. Unpublished Data. Louisiana State University School of Medicine, 1955-1958.
9. Fleisher, J. H.; Woodson, G. S.; and Simet, L. A Visual Method of Estimating Blood Cholinesterase Activity. Arch. Indust. Health 14:510-520, 1956.
10. Petty, C. S., and Dunn, L. F. The Bromthymol Blue Screening Method for Blood Cholinesterase Activity. (To be published.)

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Dental Specialty Board Examination

The American Board of Dental Public Health will hold its next certifying examination on September 10-11, 1959, in New York City, at the time of the annual meeting. Those who wish to take the examination must submit their applications not later than May 10, 1959, to the secretary, from whom further information and application forms may also be obtained.

At the recent meeting in Dallas, Tex., John T. Fulton, D.D.S., Epidemiology Division, University of North Carolina, succeeded John W. Knutson, D.D.S., chief dental officer, Public Health Service, as a member of the Board. Officers elected are:

President—Philip E. Blackerby, Jr., D.D.S., M.S.P.H., associate general director, W. K. Kellogg Foundation

Vice-President-Auditor—Robert A. Downs, D.D.S., M.S.P.H., chief Public Health Dentistry Section, Colorado State Department of Health

Secretary-Treasurer—Chester V. Tossy, D.D.S., M.P.H., Michigan State Department of Health, Lansing.

The ways in which administrative responsibility for health improvement can be exercised are manifold. What a university administration can do for students and faculty is discussed in this presentation in terms of preventive medicine and public health.

THE RESPONSIBILITY OF A UNIVERSITY ADMINISTRATION FOR HEALTH OF STUDENTS AND FACULTY

Morley B. Beckett, M.D., F.A.P.H.A., and C. J. Tupper, M.D.

TODAY MOST colleges and universities recognize some degree of interest in the health of students. The rate of development of such interest has varied throughout the country even though it began in the late 1800's. A lack of interest is practically impossible when outbreaks such as the influenza epidemic of 1957 deplete the classrooms. An interest provoked by disastrous circumstances, however, is a long step from a recognition of responsibility for aiding students in solving their health problems.[1] Teaching is the business of a school, but this main objective becomes futile when the recipients cannot see, hear, or converse. Most students who lack these fundamental attributes attend special schools where special provisions are made for their benefit. These are in some ways the extreme circumstances, but they are no more extreme, except for length of time, than the circumstances surrounding the student who is confined to bed fom an acute inflammatory disease or an injury. Such students may be completely removed from their programs of study and, if not returned fairly promptly, could be forced to withdraw from school, thus causing the school to lose potential production. These are not extreme examples and unfortunately are not too uncommon. Far more widespread, however, are the problems of the individuals who find it difficult to keep up with the pace of our educational systems because of difficulties which do not actually immobilize but which hinder and debilitate in some degree. In this classification are emotional disturbances,[2] endocrine dysfunctions, malnutrition, fatigue and often unrecognized underlying conditions such as diabetes mellitus, chronic and other infections.

The main purpose of the school is definitely affected by the health of its students and protection of this purpose can be purchased by health service to students. Health services are no exception to the axiom that we get what we pay for. Each school has a different problem, depending on the size of student body, location in rural or urban setting, availability of a medical center or practicing physicians, and other factors. Probably no two schools are able to duplicate health services in the same manner. This is not particularly unfortunate, because provision of such

service demands a special study which takes time and effort for each school. This in itself is valuable in pointing up the problems and the available resources.[2]

Programs and acceptance of responsibility for health care of students vary from practically nothing, or not more than providing first-aid packages, to services including specialists and elaborate equipment. Variations all along the line may be justified and may be adequate under the particular circumstances. The Health Service at the University of Michigan is one which has found it feasible and necessary to provide a considerable degree of specialized service. It is feasible because of the existence of a medical center and the consequent availability of specialists; and necessary because of the large numbers of students living away from home and often experiencing their first break with home jurisdiction.

To provide total care without cost to the student would be inordinately expensive and, in the case of conditions of long standing, probably not a direct responsibility of the school except for advice and help to the student on his long-term problem. However, for those conditions which are emergent or acute and which must be cared for quickly to maintain or return the student to study, some assistance is necessary, at least to reduce the cost of care and the amount of time lost. It is the policy at the University of Michigan to provide special laboratory and x-ray studies as close to cost as possible. One benefit from this is that physicians then feel more freedom in ordering necessary work without increasing financial burdens which in themselves cause withdrawal from school.

Infirmary care is a necessary provision for students who are living away from home. In most cases dormitories and boarding homes are not equipped to provide special care even to the extent or type of care that would be available to a student living in his own home. There is a large group of students who require some help for meals and nursing care for a few days, but who are not in need of full hospital care. Many students with acute upper respiratory infections or gastrointestinal upsets fall into this group for whom infirmary care meets an essential need. The main purpose of the Health Service in these instances is to return the student to class with the least possible interruption to his program but with the protection and support of top-flight medical care.

Provision of full hospital care for all conditions, whether emergent or not, is probably best arranged through some type of medical insurance. The administration of the university can play a role in obtaining this type of protection for students, because a plan tailored to the particular school, depending on health services available, is usually much less costly for the student. Often this is a service which can be shared by the administration. An insurance plan usually provides for the free choice of a physician when the care needed is beyond or out of the jurisdiction of the health service. This is a most important feature, as the problem is not only one of meeting an emergency in order to maintain a student during his regular program of study but it may well affect his return for later enrollment.

The health service also has a real role in education. Health care, except for hygiene instruction which has been included in earlier experience, can best be imparted to the student as actual example and experience. Each visit to the health service by a student serves as an opportunity to counsel on future care. This is a real and personal experience which acquaints the student with a responsibility he must soon assume and which provides him acquaintance with

the processes and methods employed in arriving at medical decisions and in determining procedures for care.

One of the most evident examples of education in health care and one for which the school administration probably receives greatest return is the prevention of disease and injury. There are now available proved, preventive measures for such former scourges as diphtheria, tetanus, typhoid fever, smallpox, poliomyelitis and, to some extent, influenza. Methods are available also for early detection of conditions which may be treated before becoming disastrous—for example, tuberculosis and even malignancies. There is no single procedure which will insure against school absence more certainly than immunization against the otherwise more prevalent contagious diseases.

Injuries and accidents are also amenable to preventive measures, at least to some extent, and this again is a matter of education. This responsibility should be assumed by administration, not by relying on an insurance policy which takes care of circumstances after their occurrence but rather by paying attention to the important area of prevention. The health service may well be charged with the responsibility for a good accident prevention program which brings into cooperative effort practically all the varied personnel that make up a school, its students, officials, maintenance employees, and faculty. The supervision of housing hazards including fire prevention and food preparation are important facets of such a program of prevention, and the educational experience of the student helps him to be a more community-minded citizen.

The sphere of responsibility for health of employees and faculty may also be measured in the return to the university. Each school has a different problem, depending on its economics and the availability of medical care. Actual medical care of illness or injury should probably always remain a personal responsibility coupled with whatever insurance program may be made available through the efforts of administration. However, the field of prevention of debilitating conditions may be of great value to the administration from an actual economic viewpoint. The faculty represents a group of people who cannot easily be replaced on either a permanent or a temporary basis without disruption of economy and education. This group represents tremendous value to the school and because of its irreplaceable or slowly replaceable nature it must be protected to the utmost.

Actual medical care of known conditions is usually quite adequate on a personal physician-private patient relationship, and this relationship should be fostered and encouraged. The administration has a role, however, in the education of its faculty on the value of preventive care and early diagnosis. This may well be accomplished by provision for voluntary examination of faculty members to demonstrate the existence of otherwise unknown or unrecognized conditions which can be referred to a private physician for treatment. The objective is to demonstrate real and personal reasons for the faculty member to seek the care of his own physician at a stage in disease when curative measures may be taken.

A program was started through the University Health Service at the University of Michigan during the summer of 1956. Many difficulties were encountered, among them the recruitment of a high-caliber staff of physicians. Another problem was the influenza outbreak of 1957, which interfered with operation of the program because of the need for using the space occupied by it for patient care. The faculty program is directed by an internist from the Medical School staff. Recruitment of

physicians needed to perform examinations in the program is the responsibility of the director. The Medical School at the University of Michigan was most cooperative in making available for this purpose physicians of proved ability, and their presence on the Health Service staff has strengthened the facilities available to students by providing multiple consultant services. By the spring of 1958 almost 500 faculty members had been examined or were in the process of being examined. A report has been made on the first 294 examinations completed.[4]

In developing this program some firm basic determinations were necessary to help insure a successful outcome:

1. The examination was as thorough as possible, including a complete history and physical examination, x-ray examinations of the chest, gallbladder, upper gastrointestinal tract and colon, and even complete dental examination and x-ray.[4-6] In addition, it included laboratory examinations of blood and urine, electrocardiography, sigmoidoscopy, referral to various specialists, and special tests whenever indicated and requested by the internist in charge of the case.

2. Examination was made in stages so as to cause as little interference as possible with other activities of the busy examinee.

3. No treatment was given, but the complete results of the examination were sent to a physician of the patient's choosing.

4. Examination was voluntary and was requested by the faculty member on receipt of an invitational letter from the administration of the University.

5. Examination and results were strictly confidential between the patient and his physician. No results were given to the administration except as part of general surveys[4] or on request of the patient.

Only a cooperative arrangement made this service possible. The work was completed at the Health Service by the physicians, who were appointed part time to the Health Service but whose primary appointment was in the Medical School and the University Hospital. It was determined that if the examinations were to be of high caliber, the physicians must spend the majority of their time in the clinical diagnosis and treatment of definite disease conditions of ill patients.

The first 294 examinations were performed for professors ranging in age from 43 to 87 years. This group included 31 women and 263 men. The procedure for each individual was started with a letter of invitation over the signature of the vice-president and dean of faculties. This letter explained the purpose of the proposed diagnostic examination, stressed its confidential nature, its voluntary basis, and the nonassumption of responsibility for treatment of any conditions revealed. The examination was considered a fringe benefit for the persons involved and no charges were made to individuals. It was interesting to note that among the first 100 patients, 22 were unable to name a physician to receive the final and detailed report until pressed to do so. Almost one-half of the patients had never had a complete physical examination and many more had not had one for as long as five or ten years.

An appointment was made for a complete history and physical examination following which the various procedures were scheduled on dates and times which best fitted the schedule of the examinee. These procedures were not complete until the following list had been covered. Laboratory studies included a complete blood count, sedimentation rate, hematocrit, C-reactive protein, blood urea nitrogen, serum cholesterol, fasting blood sugar and two-hour post glucose blood sugar determination. X-ray examinations included chest, upper gastrointestinal series, cholecys-

togram, and barium enema. Consultations with other specialists and special procedures done on each examinee included sigmoidoscopy, electrocardiography, dental x-ray and consultation, and ophthalmologic consultation. Following these, special tests were done where indicated and so recommended by the physician. When all reports had been assembled, the examinee was given a 45-minute consultation interview on the status of his health and was advised on obtaining future medical care. Each examinee was strongly urged to name a practicing physician and dentist, to whom the detailed reports on the examination were sent. In addition, examinees were urged to review the results of this examination with their family doctor.

Some of the results from radiologic examinations in this first group were as follows: Of the chest x-rays, 283 examinations, 30 per cent were normal, 64 per cent were abnormal but not significant, 4 per cent were abnormal but further study proved not significant, while 2.5 per cent were abnormal and on further study proved significant. Of the upper gastrointestinal series, 171 examinations were normal, but 117 abnormalities were revealed in the other 107 studies. Cholecystograms were performed on 265 patients. Of these, 209, or 79 per cent, were normal, and 56, or 21 per cent, showed abnormalities. The abnormalities included 24 instances of cholelithiasis. There were 235 barium enemas done. Of these, 170 were normal and 115 showed some abnormality, varying from 106 cases of diverticulosis to two carcinomas discovered by the barium enema. A more complete analysis of the role of radiology in periodic health appraisal has been presented elsewhere.[5]

The following tabulation shows the incidence of "unknown" major disease found as a result of the examinations:

Disease	No. Found	Per cent
Carcinoma	9	3.1
Lung	3	
Colon	3	
Metastatic	1	
Prostate	1	
Skin	1	
Diabetes mellitus	37	12.6
Cholelithiasis	23	7.8
Hypertension	21	7.1
Organic heart disease	13	4.4
Multiple sclerosis	2	0.7
Active tuberculosis	1	0.35
Glaucoma	1	0.35

A final summary of the 294 patients examined revealed a total of 387 previously known significant defects but 465 previously unknown significant defects. A total of 239 patients had defects previously unknown to them and, of course, untreated. The objective of the whole program is early detection of treatable defects so as to result in more cures, fewer complications, less incapacity, and greater longevity. If this type of program is approached only as a routine chore to be done, it will most certainly result in failure, but if it is accepted as a challenge, it cannot help but result in success.[6]

The University Health Service may have still one additional area in which it offers support to the University administration in return for the support that it receives from the University. This is in the area of health programs that safeguard both students and the members of the faculty. For example, the Health Service at the University of Michigan carries out a program of periodic safeguard examinations for individuals who work with radioisotopes or other sources of radiation hazard. It is the responsibility of the Health Service to monitor certain laboratories where toxic substances such as mercury vapor might be present in excess. In the past year the Health Service has

assumed the added responsibility of performing preemployment examinations for the Personnel Office of the University in order to assist in the placement of new employees in occupations for which their physical state might best qualify them.

In summary, the assumption by University administration of increased responsibility for the health of students, faculty, and other members of the organization has shown an increase. This increase has proved to be a feasible one, it has been well received, and it is economically justifiable.

REFERENCES

1. Boynton, Ruth E. The Development of Student Health Services. Student Med. 1,1:4–8 (Oct.), 1952.
2. Snyder, Benson R. College Environment as a Factor in Mental Health. Ibid. 6,1:7–18 (Oct.), 1957.
3. Malott, Dean W. A University Administrator Views the Health Service. Ibid. 2,2:40–43 (Apr.), 1954.
4. Tupper, C. J., and Beckett, M. B. Faculty Health Appraisal, University of Michigan. University of Mich. Med. Bull. (In press.)
5. Hill, B. Jay, and Tupper, C. J. The Role of Radiology in Periodic Health Appraisal. (In press.)
6. Millard, H. D., and Tupper, C. J. The Role of Oral Diagnosis in Periodic Examinations. (In press.)

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Milbank Grant to the Association

The latest foundation grant to carry on the expanded program of the American Public Health Association is an annual grant of $15,000 for 1958, 1959, and 1960 from the Milbank Memorial Fund. The Board Members of this Fund have further indicated their confidence in its administration by leaving to the Association the decision as to the purposes for which the annual grants are to be used This is the third foundation to cooperate in making it possible to carry out the new program hammered out in discussions of the past two years. The earlier ones were the Rockefeller Foundation and the W. K. Kellogg Foundation.

More than ever before the problem of medical care is under public scrutiny. Increasingly, the public agency in the community is assuming responsibility for dealing with the problem. How can this be worked out to the over-all advantage of the community is the question to which this paper addresses itself.

THE COMMUNITY RESPONSIBILITY FOR MEDICAL CARE

James P. Dixon, M.D., F.A.P.H.A.

THIS discussion of community responsibility for medical care may be started by paraphrasing an aphorism attributed to the late Alan Gregg: "Man used to be content to sit upon three-legged stools—now he prefers to sit upon four-legged chairs. The community used to be content to provide the basics of food, shelter, and clothing for all of its citizens, now it has added to this triad a fourth, the provision of adequate medical care services." There are a great many differences of opinion concerning the nature of medical care. Does it include the immediate availability of a physician when a person feels he needs such services? Does it mean any public or charitable extension of our voluntary hospital system? Does it mean making available to every child all the biologicals known to be effective in preventing communicable disease? Does it refer to the availability of home care and the extension of nursing into the home? Does it involve the provision of all necessary drugs and prosthetic appliances? Does it mean the availability of services for rehabilitation? Does it mean availability of care to the person with a recent cerebrovascular accident? Does it mean the enrichment of foods with essential requirements to maintain an optimum level of nutrition? The answer, of course, is that at a given time for a given person it may mean any of these things or all of them and more.

Michael Davis in his recently published book, "Medical Care for Tomorrow," makes a nice distinction between demand and need for medical care. Need for medical care tends to be a professional evaluation. Only when such need is felt by the individual is it converted into demand. Recognized need is the psychological basis of demand, whether it is a consequence of pain, fear of death, or an intellectual conviction that each person should have an annual checkup. Davis also points out that even when need is recognized there are obstacles to be overcome before it is expressed as a demand. Some of the obstacles which he identifies are ignorance, fear, local inaccessibility of doctors and hospitals, lack of confidence, and the fear of the cost of the needed services. The cost element has been an important factor in placing the major responsibility for personal preventive medicine on public health departments supported by taxation, or on health

agencies supported by private philanthropy, or on systems where the cost is prepaid by some form of insurance.

Consideration of public responsibility for provision of medical services must take account of some of the characteristics of the community served by the public agency. A public agency must include as beneficiaries of its services all individuals who reside within the particular political jurisdiction that is served. It may define its responsibility in terms of groups of citizens, and in so far as a citizen falls within such a group, there is a public responsibility for service to him. Yet it has been clearly demonstrated that the type of demand for medical care services varies with cultural groups. Thus, while the availability of public services may theoretically extend to a total community, the actual expressed need of citizens, which will cause them to use such services, will be conditioned by the cultural patterns of groups to which they belong.

In public health we like to think of the family as a basic structural unit. Yet, not all families are identical. The middle class family, with its matriarchal orientation and the strong need for younger members to have parental sanction, is quite different from the lower class family, oriented toward masculinity and around the concept of gang solidarity. There are undoubtedly facts stemming from these phenomena which significantly influence the use of health services within the community. For instance, in Philadelphia during the past couple of years, we have participated with the rest of the nation in considerable programming to exploit the effectiveness of Salk vaccine. There is a sharp, dramatic difference between middle class and lower class families in their demand for this protection, with middle class far outweighing lower class demand.

Some of the community attributes of medical care involved in the problem are the following. There is a deep sense in many parts of our culture that it is an individual's personal responsibility to maintain himself in optimum health and that the head of a family is equally responsible for its health. Against this concept, however, is another which includes the right to health as a responsibility of the social organization of which one is a part. Neither of these concepts is whole in itself and when taken together, there is a third concept made necessary by the very structure of society. This is the basic belief of public health which recognizes that there are health hazards in the form of potential epidemics, or lack of sanitation, or excessive consumption of alcohol with which the individual is by himself unable to cope, and which require action by the total community if he is to have adequate protection.

The provision of health services in our society is also defined by a paradoxical relationship. The principal producer of medical care service is the physician; and, in the main, this service is provided either on an individual basis or by small groups of private entrepreneurs. The essential institution for medical care, however, is probably the hospital, with the vast majority either directly supported by tax expenditures or maintained by charitable groups as non-profit organizations. It is in this mixed environment of services that the patient must find some way to have his needs met.

Although someone has said that nothing but money and racial discrimination stands in the way of the best medical care for all citizens, this seems to be a considerable oversimplification of the problem. Within our cultural setting, what is the general nature of public responsibility in the provision of medical care services? These may be listed as follows: There is placed upon the public body a responsibility to protect, preserve, and promote the health of the body politic to withstand the impact of pre-

ventable medical scourges. This is the basis for the public health concern with the control of communicable disease, and is the reason why public agencies concern themselves with research and services in the fields of heart disease and cancer with their dramatic mortality tables. It is, of course, not easy to recognize when one is serving the health of the body politic and when one is serving the health of an individual. In this regard, it is well to remember a basic axiom in the field of epidemiology, which states that one will never control a mass disease by attempting to treat all the apparent cases.

A second rather clear role of the public agency is in the field of establishment of standards and regulations that affect health and medical care. In our form of government the restriction of an individual's civil liberties or the restraint on the freedom of private enterprise is jealously limited. This means that, in general, standards which are to apply uniformly within a community must be the standards that are enforced by government. Thus, governmental agencies set minimum standards for water supplies, restaurant sanitation, hospitals, nursing homes, and industries which might pollute the air. This standard-setting responsibility comes not so much by way of the capacity of government to set standards, but because this provides a suitable and equitable device for applying standards on an impersonal basis.

A third role of the public agency is to provide direct medical services to people for illnesses of a specified nature. Thus, our whole system of hospitalization for mental illness and much of its supporting ambulatory care are in general a responsibility of state governments. The care of persons ill with tuberculosis has similarly become a public function and in our great cities there is an increasing recognition of public responsibility to make adequate emergency care available to all individuals.

In addition to the direct provision of services to these special groups, it is also customary for government to be concerned either through the provision of tax funds or direct service, or both, for the medical care of persons who are economically dependent. Provision of medical services looms large in the responsibilities of public assistance and is becoming increasingly a part of our national system of Social Security. Generally speaking, the present criterion for public responsibility is dependency, but there begins to be a concern whether pauperization must precede the receipt of such services. Thus, at present we see legislative interest on a national level for the inclusion of hospital care benefits for retired persons into our system of Social Security.

A fourth clearly defined responsibility of government is in the field of services to special beneficiaries to government. These beneficiaries tend to concentrate in large numbers at the federal level. They are such groups as the veterans, the dependents of service personnel, and the American Indians.

Finally, the government, particularly the federal government, has become increasingly involved in the capital financing of hospitals, health centers, and diagnostic clinics for the use of the entire community. This perhaps reflects an increasing inability of communities to provide these facilities through voluntary giving.

It is not possible to determine with any great accuracy whether the public agencies are becoming involved in providing an increasing proportion of the total medical care services in the community. There are some indicators to suggest this. The current stress, for instance, upon state and local governments to meet the total financial cost of hos-

pital care for needy people would suggest such a trend.

Also, it must be recognized that the past decade has seen a tremendous growth of the voluntary movement in meeting medical care needs. This is seen dramatically in the hospital field with widespread adoption of prepayment for hospital care. Prepayment for ambulatory medical services has not developed as rapidly, although the fact that it can be a suitable organizational device in meeting these needs is borne out by the successful experience of such widely different organizations as the Health Insurance Plan of Greater New York and the directly-operated union health centers.

In my own judgment the increasing urbanization of our society will inevitably force governments to have a concern for health and medical care greater than is presently assumed. It may be well, therefore, to review some of the characteristics of governmental health services that are useful to consider in over-all community planning. Perhaps the most important characteristic of the entrance of government into direct health services is its leveling influence. Because standards must be set which will care for the needy and a broad group of beneficiaries, these standards do not always permit the best service to an individual beneficiary at any given time. The specter of government moving into health services is viewed with alarm particularly by professional workers, who fear that in government-dominated services the autonomy of the individual professional worker is considerably limited. A similar kind of concern is expressed in the belief that in governmental systems political need for service to an individual may loom more importantly than the basic health need. In short, if government is involved in the provision of medical services either directly or through financing, government will have a great deal to say as to who is to be a beneficiary of such service.

Another problem is the nonspecific fashion in which government may be forced to respond to community medical care needs. Such demands may be made in the best of faith and with no improper political implications. As an example, I think of two kinds of services which we presently have under study in our own community. Like many others, we have had a strong feeling of concern about the problems created by the use of alcohol. We have, indeed, permitted ourselves to be persuaded that a concern for alcoholism is a proper public health problem. With the best available community advice and within our limited resources, we have actually provided service programs for the alcoholic. After a few years of operation, however, a sharp look at these programs does not leave one with a conviction that they are of much value to the community as a whole. They succeed in serving only a tiny portion of individuals with the problem and in true bureaucratic fashion select for their emphasis services not to the middle class but to the lower class. As a matter of fact, it can be said with considerable assurance that this is one of the problems of bureaucracy. In a recent report, Joseph R. Gusfield makes a statement that the issue of good government in municipal politics has often ranged middle class against lower class. The great support of the city political machine by the lower classes has been well documented. Such studies reveal that good government has only been good from the standpoint of middle class values, but not necessarily from the standpoint of lower class values. In this program for alcoholism it seems to me that we may have been imposing middle class values upon another class. At any rate, the program could not be said to be effective if measured from

the point of view of its capacities to reduce biological dependency on alcohol.

A second example of irrational pressure put upon government for medical services might be surmised from another recent experience. Like many other communities, we have held the belief that it would be important to mental health to increase the number of guidance clinics which are available for service to youngsters. Indeed, we had even gone so far as to estimate what the present deficiencies were, and what the total number of new units should be. Happily, before we had an opportunity to respond to community pressures in this regard, we were able to undertake some studies and turned up the rather startling fact that 60 per cent of the youngsters accepted in our existing psychiatric clinics had dropped out of treatment by the end of their third visit. This clearly suggests that there are some basic deficiencies in this method of providing services which might have been readily overlooked when responding to pressure to increase the amount of services available.

When government is involved in medical care services, it often necessarily provides other services at the same time. For instance, in our public hospital, nearly 40 per cent of the patients served in the general medical and surgical areas could be said to be long-stay patients as opposed to a corresponding 10 or 20 per cent in the community hospitals. Some of this caseload is brought about by a process of community selection, but some of it exists because the people hospitalized in the general hospital could go to another environment, such as a home or a nursing home, if one were available. Thus to serve its function as a public hospital this institution must have a very large staff to arrange for proper placement of its patients upon discharge.

The effect of the provision of services by government varies greatly depending upon whether the services are provided directly through paid employees or whether it chooses to purchase its services in the community market place. The systems of financial and personal accountability with which we restrict our governmental operations do not lend themselves too happily to the organization of staffs for the provision of direct medical care services. It is difficult for governmental agencies to effectively compete salary-wise for a quality of personnel which would measure up to a given community's norm. It is difficult for government, because of its concepts of tenure of employment, to keep fixed overhead down to an efficient level. It is difficult for government to intimately personalize health services. Such services tend to take on the characteristics of government itself.

Against these disadvantages it may be said that, in theory, government should be able to provide services more efficiently by direct operation than through purchase, particularly if some profit is necessary to the ultimate producer. It should also be said that government ought to be able to function effectively as a mediator of those subtle situations where elements of racial discrimination may affect the availability of medical care.

In order to avoid some of the disadvantages of direct services, it is possible for government to purchase through tax funds medical care services for specified beneficiaries to the extent that such beneficiaries receive the majority of services under nongovernment auspices. Such purchase of services tends to promote less community disruption and more community uniformity. Purchases of services by contract, as opposed to direct services, also obviate some of the difficult problems of bureaucratic administration. Each method probably has its proper place. The correct method for a given community at any given time must be worked out by the community.

It should be clear from the foregoing discussion that there are no categorical answers as to what role in the provision of health services government should have in any community at any given point of time.

Certain trends are obvious: an increasing concern on the part of government for economically disadvantaged groups such as the needy, the medically needy, and retirees; a continuing tendency on the part of people to continue to use the organizational devices of government to secure a more equitable availability of such services; and the continuing concern of the use of government to insure against the possibility of health disasters such as epidemics.

Against this we have arrayed the personal force of individual responsibility, the tremendous growth of voluntary insurance, and the increasing health literacy on the part of all our people. We have pointed out that one characteristic of government is its characteristic middle class response to lower class pressures. I suspect that this is equally a characteristic of much of our voluntary health movement.

These facts suggest that there is another emerging role of government that should be thoroughly explored in these times. It is the role of government taking the responsibility to assure that proper planning, counseling, and leadership are incorporated into our community efforts for better medical care.

It is probably at the local level of government where government and voluntary agencies can join together to extract out of their total community resources a reasonable system of meeting medical care needs. To insure success of such planning, government on the one hand must learn to be less supercilious about the ultimate worth of the voluntary health movement, and the voluntary health movement on the other hand must accept the fact that government does have a large sanction from the people for planning and provision of services.

Government is deeply involved in the provision of community medical care services. We have examined some of the services now provided in the light of community needs and demands. Trends indicate perhaps that the role of government in this matter may be increasing rather than decreasing. Altogether, there is a need for better community planning for medical care with recognition in the planning process of the role of government.

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This paper was presented at the Eighty-Fifth Annual National Conference on Social Welfare, Section on Services to Agencies and Communities, on May 14, 1958, in Chicago, Ill.

Water-borne outbreaks of dysentery as reported in this paper are rare today. Nonetheless, there is food for thought in this story. It is a reminder that the price of good waterworks practice is vigilance and alertness.

AN EPIDEMIOLOGICAL STUDY OF AN OUTBREAK OF WATER-BORNE DYSENTERY

Lt. Colonel Louis N. Altshuler (MC) U.S.A., and
Captain Donald J. Hernandez (MSC) U.S.A., F.A.P.H.A.

IN ORDER TO APPRECIATE some of the problems encountered by the U. S. Forces in Germany, one must realize the relationship which exists between the U. S. Forces and the German State. When Germany was entered and occupied as an enemy power, certain obligations were imposed upon the various levels of German government. One of these pertained to water supplies. In areas where troop concentrations warranted it, the German municipalities were required to provide an acceptable water supply according to U. S. standards. This imposed definite requirements on source construction, protection, and treatment to include chlorination. In addition, Army personnel were entitled to survey and visit any or all portions of the water supply and distribution systems. Thus, up-to-date knowledge was always available about the status of these supplies.

However, in May of 1955, Western Germany was granted her sovereignty and became part of the NATO family. With the granting of sovereignty, the status of the U. S. Forces changed to the position of visitors in an allied nation. However, the two federal governments agreed that the various municipalities must continue to provide U. S. installations with "potable water." Unfortunately, no details were set forth as to what constitutes a potable water. Thus, an issue was created in certain areas due to the German belief that "potable water" merely means that water must be bacteriologically safe and that protective measures, type of treatment, and operation are not to be considered as elements in defining water quality.

On the basis of this reasoning many communities discontinued chlorination or carried it on in a haphazad manner. On the other hand, it was the view of the U. S. Forces that it is not sufficient to depend upon the examination of a few bacteriological samples and that source protection and chlorination were still required. Because of this difference of interpretation, where chlorination was continued it was only continued due to the good working relationship between the local U. S. Forces and the local municipality. This situation also applied to surveys of the systems by military personnel. In most instances, the municipalities still permitted sanitary engineers of the medical service to survey the civilian water system, but it was their prerogative to decide what would

be done with any recommendations which might be made. It must be said, however, that the city officials usually gave such recommendations every consideration, with the exception of recommendations concerning chlorination.

The basic difference between American and German opinions hinges on the need for chlorination as a protective measure regardless of the original quality of the water. American opinion favors this protection, but Germans feel that water need be chlorinated only if it is proved to be contaminated, and even then they feel it necessary to carry a residual throughout the system. In order to improve German-American relations, the U. S. Forces instituted a program designed to provide its own chlorination at all major U. S. installations. The intention was to relieve municipalities of this responsibility as rapidly as was feasible. Such was the status at the time of the outbreak.

During the period April 23 to May 1, 1956, an outbreak of dysentery occurred at Panzer Kaserne, located at the edge of the city of Boeblingen, which contains troop and dependent housing. Chief complaints were abdominal cramps and colicky pain of 24 to 36 hours duration followed by diarrhea with 10 to 18 watery stools daily. The outbreak involved military personnel and their dependents living in the Panzer Kaserne area, dependent school children who lived in other housing areas and attended school at the Kaserne, and men assigned to the Kaserne for work but living elsewhere. It was interesting to note that the parents of children attending the Panzer Kaserne School but living in other housing areas did not acquire the disease. This incidence distribution showed that the outbreak was confined to personnel living or working at Panzer Kaserne. First notification of the outbreak was received late on April 25, 1956, when 65 cases were reported.

Epidemiological Data

Preventive medicine personnel are called upon to investigate water-borne epidemics at such infrequent intervals that there are few who can claim any great experience in this field. Consequently, detailed information of such outbreaks is of more than ordinary interest. The first day, eight men reported to sick call with what was diagnosed as gastroenteritis, the second day there were 16, and the third day 41. It was at this time that the authors were first notified.

A preliminary investigation carried out shortly after notification was received revealed sufficient information to cast suspicion upon food or water as being the causative agent. Based upon these observations, stools and vomitus, plus samples of food eaten at previous meals, were collected and sent to the laboratory at the U. S. Army Hospital, Bad Cannstatt. Good epidemiological evidence could have been supplied by laboratory examinations for a number of infective agents, and a study of paired sera. It was unfortunate, however, that the laboratory requests for stool examinations made out by the attending physician requested examination only for ova and parasites, not for bacteria or viruses. Thus, the stool specimens were of little value and, as could be expected, the results of laboratory examinations were negative. Tests for Salmonella-type organisms performed on food samples also proved negative.

Detailed investigation of the source and distribution of food and milk consumed was accomplished in order to determine the possibility of their being involved in the epidemic. In Germany, the U. S. Army provides food shopping facilities through Quartermaster commissaries. Each commissary is normally located in a center of population and serves all the American families in that area. In the vicinity of Boeblingen,

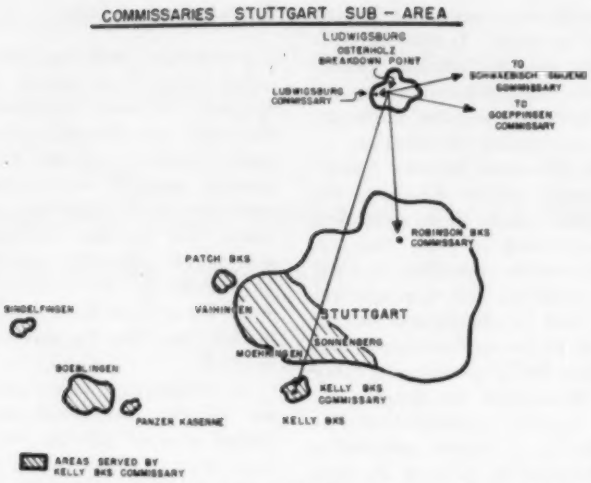

Figure 1—Commissary in the Stuttgart Area and areas served by the Kelley Barracks Commissary

there are three commissaries, one located in Ludwigsburg and two in Stuttgart. Foodstuffs for all three commissaries were broken down at one central point (Osterholz breakdown point, Ludwigsburg) and then sent to the various commissaries. Dependent personnel living at Panzer Kaserne purchased all foodstuffs from the commissary located at Kelley Barracks, Stuttgart. This was with the exception of some food purchased in local markets; however, there was no correlation between these foods, or any given food or vendor, and the epidemic. The Kelley Barracks Commissary also served personnel living in Boeblingen, Sindelfingen, Kelley Barracks (Stuttgart), Patch Barracks (Stuttgart), and the communities of Vaihingen, Sonnenberg, and Moehringen (all in the southwest part of Stuttgart).

No cases were reported from any of these other areas, with the exception of children who attended school at Panzer Kaserne and personnel who worked at Panzer Kaserne (see Figure 1).

The troop rations were broken down at the Seventh U. S. Army ration breakdown point (Ludwigsburg), with the exception of milk, which was broken down at the railhead in Ludwigsburg. All Seventh U. S. Army units located in the Stuttgart area picked up milk and rations from these points and no cases were reported from troop units other than those stationed at Panzer Kaserne. Food-handling practices in the breakdown method were considered satisfactory and it was felt that they played no part in this outbreak.

At the same time that items of subsistence and food-handling factors were being checked upon, a study was made of the water supply. All water for Panzer Kaserne comes from the municipal supply for the city of Boeblingen. This supply provides water to approximately 18,400 Germans plus 3,500 U. S. personnel in Panzer Kaserne. There were also approximately 30 U. S. dependents living on the economy in the city. All water for Boeblingen is derived from three sources: The Aidlingen, the E-Work, and the Ammertal Schoenbuch Gruppe (relative locations of these sources can be seen in Figure 2).

At the time of this outbreak, all water received by Panzer Kaserne was coming from the E-Work source. For that reason, the investigation centered around this source and its distribution system. However, the other sources were also surveyed and no conditions were found which would implicate them in the outbreak under consideration. Water for the E-Work is derived from a well, a series of springs, and an infiltration gallery, all of which are located on the southeast edge of Boeblingen.

Water from all springs flows to the infiltration gallery, which is approximately 250 meters long, 6 meters deep, and constructed of 300 mm diameter perforated clay pipe. Located at 50-meter intervals are six inspection shafts and all water from the springs and the gallery flows through the gallery to the final inspection shaft. From this shaft the water flows by gravity to a 600-cubic meter reservoir located under the E-Work pump station, from which it is normally pumped to a 1,200 cubic meter reservoir serving the Panzer Kaserne area of Boeblingen (see Figure 3). The well water is pumped directly to the 600-cubic meter reservoir and does not enter the final inspection shaft. There are three lines entering the final inspection shaft: one brings water from the springs and the gallery; one takes the water to the 600 cubic meter reservoir; the third, which is valved, acts as an overflow in the event of a high water table.

In the course of the inspection on April 26, 1956, it was found that approximately 20 feet from the shaft a trench had been dug for the installation of a water line from the Aidlingen water source to the E-Work reservoir and that during the digging of this trench the overflow pipe had been cut and a section removed. The construction trench intersected a stream which was heavily laden with sewage. This stream was located parallel to and approximately 100 feet from the infiltration gallery and the stream water had flowed into the trench (see Figure 4).

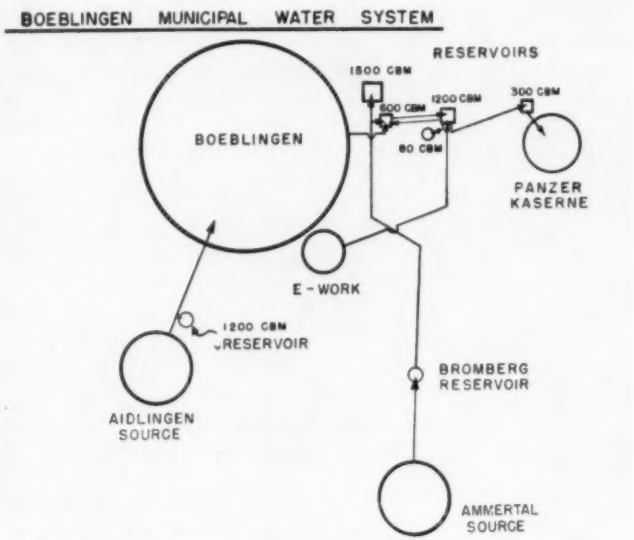

Figure 2—Boeblingen municipal water sources and reservoirs

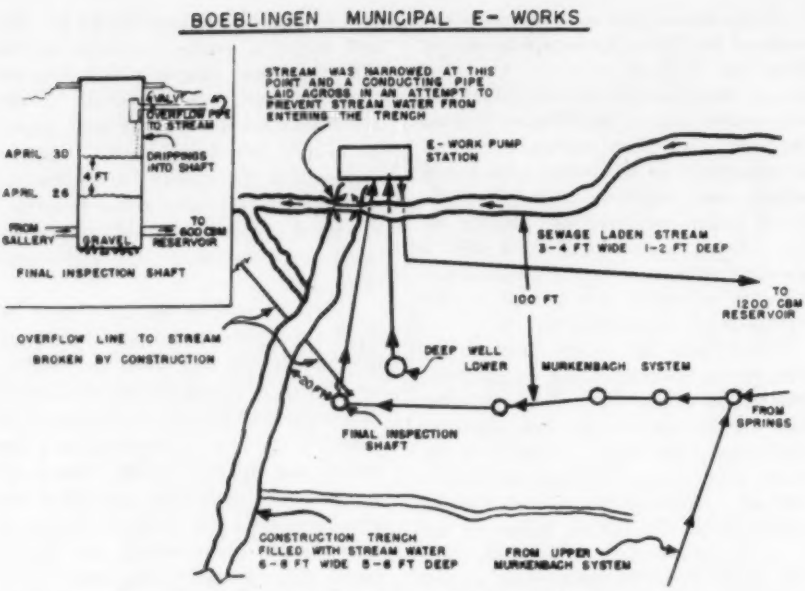
BOEBLINGEN MUNICIPAL E- WORKS
STREAM WAS NARROWED AT THIS POINT AND A CONDUCTING PIPE LAID ACROSS IN AN ATTEMPT TO PREVENT STREAM WATER FROM ENTERING THE TRENCH
E- WORK PUMP STATION
OVERFLOW PIPE TO STREAM
APRIL 30
DRIPPINGS INTO SHAFT
4 FT
APRIL 26
FROM GALLERY
GRAVEL
TO 600 CBM RESERVOIR
FINAL INSPECTION SHAFT
SEWAGE LADEN STREAM 3-4 FT WIDE 1-2 FT DEEP
100 FT
TO 1200 CBM RESERVOIR
OVERFLOW LINE TO STREAM BROKEN BY CONSTRUCTION
DEEP WELL LOWER
MURKENBACH SYSTEM
300 FT
FINAL INSPECTION SHAFT
FROM SPRINGS
CONSTRUCTION TRENCH FILLED WITH STREAM WATER 6-8 FT WIDE 5-6 FT DEEP
FROM UPPER MURKENBACH SYSTEM

Figure 3—Final inspection shaft and line of other inspection shafts on gallery

Figure 4—Newly excavated Aidlingen Trench, with E-Works in background

At the time of the visit, the broken end of the overflow pipe was partially submerged in the trench water and obvious liquid flow was noted dripping into the shaft from around the overflow pipe where it entered the shaft (see Figure 5). The water level in the construction trench was found to be at a higher elevation than the invert of the overflow line where it left the inspection shaft. The ground in this area was apparently saturated with sewage and the trench water was probably flowing along the outside of the overflow pipe, rather than entering through the closed overflow valve. Samples of the trench water, the shaft water, and the water dripping into the shaft were collected at this time. The bacterial examination showed evidence of gross fecal contamination in all three waters. Owing to rainfall during the week prior to April 22, the water level in the trench had at one time completely submerged the broken end of the overflow pipe. This conclusion was based upon a well-established high water line on the side of the trench.

The E-Work well is located on the same side of the stream as the infiltration gallery but is approximately 70 feet from the stream. Water is pumped from the well directly to the 600-cubic meter reservoir beneath the pump station. Samples of this water, which were collected for bacteriological analysis, were negative for coliform organisms.

Chlorination at the E-Work was accomplished by a manually controlled gas, solution-feed, 400 gm/hr chlorinator. On April 26, chlorine was being fed at a rate of approximately 2.2 ppm and the free chlorine residual at the plant was 2.0 ppm. No scales were provided for weighing the chlorine and the cylinder is changed only when the cylinder pressure falls by reason of complete exhaustion of the contents. Municipal officials agreed to increase the chlorine dosage to approximately 3.5 ppm, which is the maximum capacity of the chlorinator. No records pertaining to chlorination were maintained at this pump station. Such records could have been of considerable value in this instance, as it was believed that on the actual days of outbreak (April 21-22, 1956), the flow of contaminated water into the inspection shaft could have been such as to create a chlorine demand in excess of the chlorine dosages.

The plausibility of this theory was confirmed on April 30, 1956; on this date chlorine was being fed at a rate of 3.5 ppm. The free chlorine residual at a point shortly following the point of

Figure 5—Final inspection shaft, where sewage entered the system

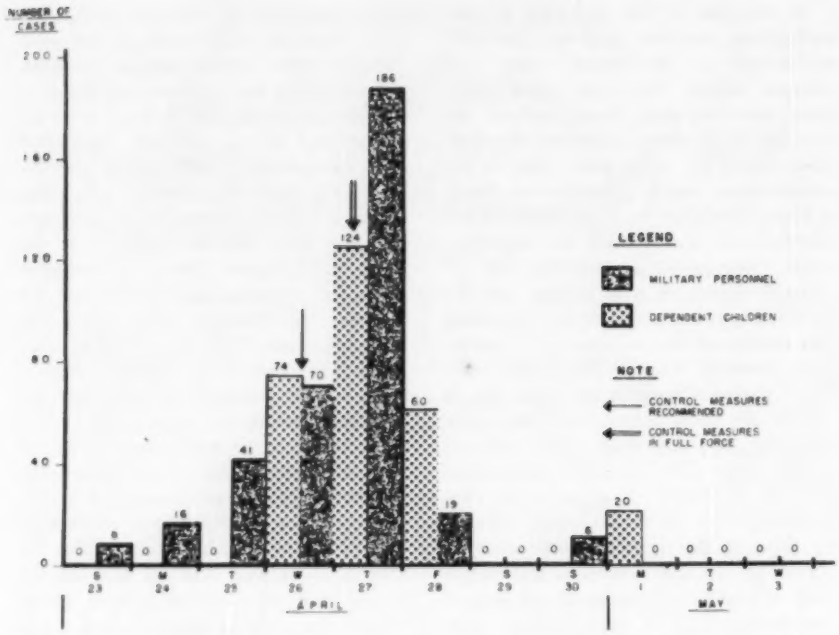

Figure 6—Daily incidence of dysentery for military personnel and school-age children

dosage (approximately 2 seconds later) was 1.0 ppm, indicating an immediate high chlorine demand, and there was no detectable residual when the water arrived at the 1,200 cubic meter reservoir serving the Panzer Kaserne area (approximately 44 minutes later). Rain had fallen for several days before April 30, lending further credence to the hypothesis that heavy contamination of the E-Work source occurred under very similar circumstances about April 21 or 22.

On April 30, the end of the overflow pipe was again partially submerged, a much heavier flow was noted seeping into the final inspection shaft, and the water level in this shaft was four feet higher than on April 26, 1956. At this time, the Boeblingen municipal officials, in consideration of these facts, agreed to discontinue the use of the E-Work source. On May 1, 1956, Panzer Kaserne started to receive water from the Ammertal Schoenbuch Gruppe and also from the Aidlingen source.

Prior to this outbreak, when the water arrived at the 1,200 cubic meter reservoir, it was rechlorinated by personnel working for the local Army Area Engineer Office. Chlorination facilities consisted of two dripcrocks which were normally operated between the hours of 0830 and 2100 and not operated at all on Sundays or holidays. These crocks dripped a 300 ppm chlorine solution into the reservoir at a rate which the operator "thought was about right," but no attempt was made to verify this "thought." On Saturday, April 21, 1956, chlorination stopped at approximately 1545 hours, when the feed solution ran out, and was not reinstituted until approximately 0930 hours, Mon-

day, April 23, 1956. No records pertaining to chlorination were maintained at this chlorination point. Of the 1,600 cubic meters of water received daily at this reservoir, approximately 1,200 cubic meters went to Panzer Kaserne and 400 cubic meters to parts of Boeblingen in the same general area. From the reservoir, Panzer Kaserne water is pumped to a 300 cubic meter elevated tank at the Kaserne, from which there is a gravity flow to the distribution system.

Statistical Data

The total number of cases involved in this outbreak (905) included 346 military personnel, 321 nonschool-age dependents, and 238 dependent children attending school at the Kaserne. The peak for military personnel was reached on the fifth day, during which 186 cases were reported (Figure 6).

The peak for dependents and dependent school children was the same as for the military personnel and coincided with the incubation period of the disease. Of the total military cases, six were hospitalized with signs of dehydration and appearance of blood and mucus in their stools. A slight rise in temperature was noted in 50 per cent (99° to 100° F), but the most common complaint was abdominal pain and loose, watery stools (Figure 7).

Bacteriological Data

It was interesting to note that no cases were reported among the German population using water from the E-Works source. It is believed that this

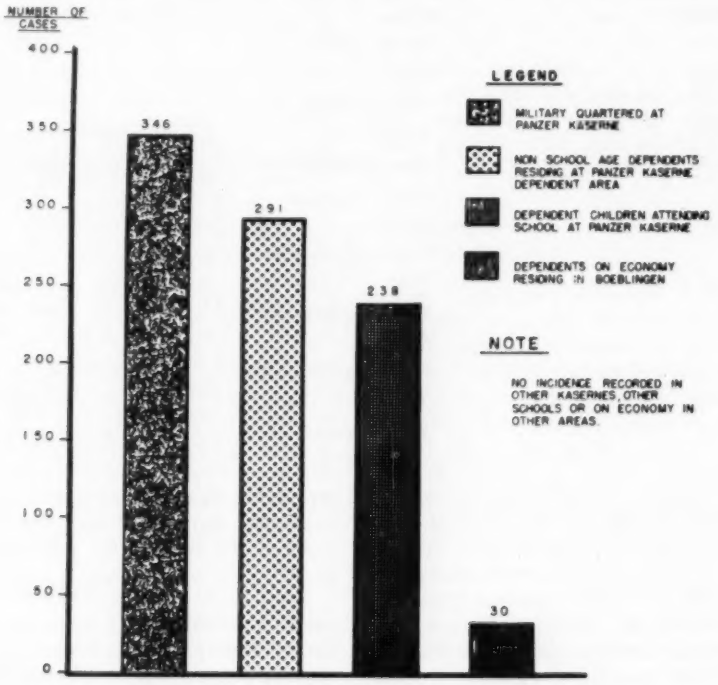

Figure 7—Comparative incidence of dysentery

Table 1

Date	Location		Results
4/26/56	E-Works	Final inspection shaft	All positive portions, E.coli
"	"	Drippings into final inspection shaft	All positive portions, E.coli and Aerobacters
"	"	Trench adjacent to final inspection shaft	All positive portions, E.coli
4/27/56	"	Final inspection shaft	" " " "
"	"	Drippings into shaft	All positive portions, E.coli and Aerobacters
	"	Drippings into final inspection shaft	All positive portions, E.coli and Aerobacters
4/30/56	"	Final inspection shaft	All positive portions, E.coli
"	"	Drippings into final inspection shaft	" " " "
"	"	Well	No positive portions
7/12/56	"	Well	One positive portion, E.coli
"	"	Final inspection shaft	All positive portions, E.coli
7/13/56	"	Final inspection shaft	" " " "
7/19/56	"	Well	No positive portions
"	"	Final inspection shaft	" " "
7/24/56	"	Well	" " "
"	"	Final inspection shaft	" " "
7/25/56	"	Well	All positive portions, E.coli
7/31/56	"	Final inspection shaft	No positive portions
"	"	Well	" " "
8/1/56	"	Well	" " "
"	"	Final inspection shaft	" " "
8/2/56	"	Well	" " "
"	"	Final inspection shaft	" " "
8/9/56	"	Well	" " "
"	"	Final inspection shaft	All positive portions, E.coli
8/16/56	"	Well	No positive portions
"	"	Final inspection shaft	All positive portions, E.coli

was due to the following factors: A smaller population was exposed, less water is consumed by German civilians for drinking purposes, such individuals may have a higher acquired immunity to the disease agent involved, and mild cases of diarrhea are not considered important enough to report or to seek medical attention. Diarrhea is not a reportable illness in Germany and no systematic search was made for civilian cases at the time of the outbreak described.

A call made to the 4th Medical Laboratory, Landstuhl Army Medical Center, for laboratory assistance was met with prompt action. The mobile laboratory, with two laboratory officers and three

clinicians, arrived at Panzer Kaserne within 48 hours and immediately set up shop. Rectal swabs were taken on all acute or convalescent cases and blood was taken from the more seriously ill patients for research and studies. Analysis of the swabs revealed no enteric pathogens and the research studies did not shed any new light. All patients recovered uneventfully. No cases of viral hepatitis occurred, although it was feared that this might be a secondary complication.

Samples of water that were taken from the E-Works for bacteriological analysis showed evidence of gross fecal contamination as shown in Table 1.

As can be seen, the water supply was heavily contaminated. Gas production ranged from 25 per cent to 60 per cent in 24 hours and from 30 per cent to 95 per cent in 48 hours. This further pinpointed the sources of the outbreak at the E-Works water source.

It is interesting to note the pattern which occurred later at the well and the final inspection shaft. The well showed contamination only once, whereas the shaft continued to show intermittent contamination. In all probability, the ground around the shaft had become so saturated with the grossly contaminated trench water that four months later it still yielded polluted water. Although not included in this report, later samples were collected and intermittent contamination was still being picked up a year later. Once an area is saturated as it was in this instance, it is extremely difficult to tell how long it will take before all the contamination is leached out.

Control Measures

As soon as it became evident that the Kaserne water supply was the causative agent of the outbreak the following control measures were instituted:

1. All water for drinking or cooking purposes in dependent areas was boiled for a minimum of one minute.
2. Lyster bags, with adequately chlorinated water, were located throughout the Kaserne.
3. Individual water disinfection was instituted utilizing canteens and water-purification tablets. All men were required to wear their canteens, filled with treated water, while in the field or at work.
4. All individuals exhibiting symptoms, no matter how mild, were encouraged to attend sick call.
5. All food handlers with diarrhea were temporarily excused from performing their normal duties.
6. A search was made for the detection of possible carriers.

The application of control measures by the troops was initially hampered by the fact that troop units had quantities of obsolete supplies for water treatment and did not have adequate supplies of calcium hypochlorite ampules. Personnel also displayed a lack of knowledge about proper use of water treatment chemicals. However, adequate supplies were soon made available and the program proceeded in an excellent manner. Once the control program was in effect, no new cases were reported.

Cooperation with German Public Health Authorities

The cooperation between U. S. Army and German health officials was excellent, once the German officials were convinced that the dysentery outbreak was due to contaminated water from the E-Works. German health authorities declared the water at this source nonpotable and directed that its use be discontinued. As an interim measure, water from the Ammertal Schoenbuch Gruppe and from the Aidlingen source was then provided to the Kaserne.

The Ammertal Schoenbuch Gruppe water was not chlorinated, so that the resulting mixed water had a negligible chlorine residual. This water was therefore rechlorinated (at a dosage of 2.0

ppm) at the 1,200 cubic meter reservoir on a 24-hour basis utilizing the existing drip crocks. In addition, emergency water discipline at the Kaserne and dependent housing area was still maintained.

Discussion

During the course of this investigation, a number of instances were noted where extremely poor judgment was exercised and poor procedures were in use. Among these may be noted the following:

1. Municipal engineering personnel realized that they were working in a water supply area and still did not observe good engineering practices when they excavated the trench. This permitted the cutting of the overflow line and flooding by the sewage-laden stream. Even after this happened no attempt was made to correct the situation. In fact, they stated their intention of leaving the sewage-laden water in the trench until after the new water line had been laid, in order to detect line leaks by the air bubbles which would rise to the surface. This was actually permitted and as a result, the new line was contaminated. The proper procedure for detecting leaks in new mains is to test the mains at high water pressures and visibly note where leakage occurs. When changes or repairs are made on a water works, they must be made with the greatest of caution. If they are not, they can be made in such a way as to endanger gravely the lives of personnel using the system.

2. No attempt was made to maintain records on chlorination. Thus, it was impossible to obtain any accurate information about chlorine dosage, chlorine residuals, or chlorinator failures. This is extremely poor procedure which not only results in a lack of reliable information but also encourages careless operation.

3. Haphazard "booster" chlorination was practiced at the 1,200 cubic meter reservoir, with no chlorination accomplished on Sundays and holidays, and no records of any kind kept. When a chlorination station is operated, it should be operated in such a manner that records are maintained as to the amount of chlorine fed, the amount of water treated, and when treatment is carried out, including comments on any unusual occurrences. Without these data the chlorination is done haphazardly and gives a false sense of security.

4. As set forth in pertinent regulations, appropriate military personnel were responsible for making daily determinations of chlorine residuals at points of usage and for making at least weekly checks of chlorine dosage at all chlorination points. However, no chlorine residual checks were made on Sundays or holidays and no checks were made on chlorine dosages. The lack of Sunday and holiday checks left a gap which was especially significant on April 22, one of the critical days of the outbreak. Had weekly dosage checks been made and had proper liaison been established with municipal personnel, the cause of this outbreak might have been detected sooner and the outbreak possibly averted.

5. Many troop units at Panzer Kaserne had on hand inadequate and/or obsolete supplies for use in water treatment. Personnel also displayed a lack of knowledge as to the proper use of the appropriate items. Therefore, the institution of water discipline was initially hampered. Since that time, Quartermaster sections have called in all supplies of obsolete items and have replaced them with the correct items.

Conclusions

This outbreak was caused by sewage-laden water entering the final inspection shaft at the Lower Murkenbach (E-

Works) system. In all probability, either the quantity of contamination was so great as to utilize completely the chlorine being fed at the E-Works, or there was a chlorination failure at the E-Works at the time in question. Approximately a week later the first-mentioned situation did exist and in all probability existed at the time of the outbreak. The second situation is only presented as a possibility in view of the fact that no records were available to show otherwise. If the booster chlorinators at the 1,200 cubic meter reservoir had been functioning, there is a possibility that the outbreak could have been averted. The event is proof that such outbreaks do occur despite the often repeated phrase, "We have been operating for years and have never had any trouble."

Water-borne outbreaks of this type are relatively rare today, and because of this fact, many personnel in and out of the water works and public health field have acquired a complacent attitude concerning the precautions which must be taken if such outbreaks are to be prevented. This epidemic could have been much more serious then it was, for example, had the causative agents of typhoid fever or infectious hepatitis been present. It is hoped that the report of this outbreak will serve to identify a number of physical deficiencies in water works practice which should be avoided, that it will act as a warning to eliminate complacency, and that it will alert personnel to their responsibilities.

ACKNOWLEDGMENT—The authors wish to express appreciation for the advice and guidance furnished by Colonel Adam J. Rapalski (MC) and Lt. Colonel Robert McCall (MSC), Medical Division, Headquarters, U. S. Army, Europe, in the investigation of this outbreak.

Lt. Colonel Altschuler is chief of the Preventive Medicine Division, Office of the Surgeon, and Captain Hernandez is on the staff of the Medical Section, Seventh U. S. Army, APO 46, New York, N. Y.

This paper was presented before a Conference on Preventive Medicine at the Research Institutes, Walter Reed Army Medical Center, Washington, D. C., in February, 1957.

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Journal of Public Health

EDITORIALS

The New Look at the Journal—One Year Later

Last January the Journal presented itself to its readers in a new garb The new appearance was one of the results of the good, hard look to which it had been subjected. As a result of this searching examination, a number of steps were taken to meet desires expressed by members of the Association. As the readers of the Journal are aware, it now has a new appearance—a new layout, new typography, a new color. This physical change has its counterpart in the content of the Journal. For example, it was felt that the Journal should endeavor to obtain and to publish more contributed papers, that is, papers not presented at the Annual Meeting. Action was taken to move in this direction and definite progress is now visible. During the period 1956-1957, about 100 articles were contributed to the Journal; for the period 1957-1958 the number of contributed papers rose to 200. Not all of them were published, but these figures indicate that we have been able to stimulate an increased flow of manuscripts. Furthermore, while the number of contributed papers published in 1956-1957 represented 25 per cent of all the articles in the Journal, this proportion rose to about 44 per cent in 1957-1958.

The desire to have closer relations with Affiliated Societies and Branches has led to greater emphasis on news from these bodies and an endeavor to further their publication desires. In these ways steps are being taken to have the Journal meet the needs of its readers in other ways and over the next 12 months we hope to be able to report progress in other directions.

New Law on Chemicals in Food

In 1957 the U. S. Department of Health, Education, and Welfare proposed to the Congress legislation amending the food and drug law, so that chemicals used in the processing of foods must be proved safe by industry before being sold for use in foods.* An important step toward this goal was taken on September 6, 1958, when the President signed the amendment to the food and drug act.

Under the new law, the manufacturer or promoter of a new food additive will have to test it for safety on animals and

* Chemicals in Food as a Public Health Problem. A.J.P.H. 48:1066–1068 (Aug.), 1958.

submit the test results to the Food and Drug Administration. Adequate testing of a food additive to determine its safety for human beings ordinarily requires at least two years of animal feeding tests. Heretofore it was an almost impossible task for the Food and Drug Administration to test the many new products that came along. While most sponsors of new food additives made the necessary tests first and checked with the Food and Drug Administration before using the additives, some did not—nor did the law require it. Even those additives for which testing was undertaken could be used in food while tests were being conducted.

Now, if the Food and Drug Administration is satisfied that the data establish safety of the additive under proper conditions of use, it will issue a regulation specifying the amount which may be used, the foods in which it may be used, and any other necessary conditions. If in the opinion of the administration the safety of the additive is not established, its use will not be permitted.

The new law takes account of additives commonly used in food before January 1, 1958. Experience based on such use may be taken into account in determining safety. Consequently, common additives, such as sugar, salt, vinegar, and many others will be exempt. For substances already in use before January 1, 1958, but which may not be generally recognized by experts as safe, industry will have 18 months from the date of the enactment of the law to present the required data on safety, provided there is no evidence that the substance is unsafe. The law also forbids any additive use that would promote consumer deception.

Any person adversely affected by an order of the Food and Drug Administration will have an opportunity for a public hearing. An order issued after such a hearing will be subject to court review. Furthermore the new amendment requires that such an order be sustained "if based upon a fair evaluation of the entire record."

There is no doubt that the new legislation is a major step forward in protecting the public from unsafe food additives and one that will benefit not only the public but the food industry as well.

National Medical Research Program

The National Fund for Medical Education has established a medical research program. This program has been set up to meet the desire of local community funds and chests "to help support broad fundamental programs of basic medical research on a national level." Voluntary health agencies are also being invited to support this program.

The Fund will continue to use funds from corporations to obtain support for the teaching budgets of the accredited medical schools of the country. In other words, the new program will also tap new sources of funds.

REPORT OF THE CHAIRMAN OF THE TECHNICAL DEVELOPMENT BOARD TO THE GOVERNING COUNCIL 1957-1958

THE Arden House Conference recommended the establishment of the Technical Development Board as an overviewing body to advise the Association on its professional program and achieve an active, balanced total program. The membership of the Board is made up of the chairmen of three Standing Committees (Evaluation and Standards, Professional Education, and Research Policy), the chairmen of all eight Program Area Committees, six members appointed by the Executive Board, one of which is chairman. The membership of this Board was specifically designed to be effective in recommending a program of balanced activities by the Association in all aspects of the public health program, the establishment of new committees, the undertaking of new studies, research, and other activities, and the curtailment of outworn activities. Its principal purpose is to make our Association a powerful, constructive force for improvement of the health of the people of this nation. Thus the Association and its members can advance the periphery of public health knowledge, find ways of improving the quantitative and qualitative standards of public health work, stimulate the provision and extension of adequate health services and medical care for all the people, and join with other social and economic forces on the national, state, and local levels in developing the necessary community organization to assure the availability of such service and care. Only through this process can the Association become a strong and significant force in helping to solve the health problems of the peoples of the world.

During this first year of activity the members of the Technical Development Board have worked diligently through several two-day meetings and many of the members have served on specially appointed working parties which have been appointed to speed the date when the Board might truly feel that it was making headway with its multiple assignments.

The assignment to which the TDB gave first priority was to "initiate and assist in the development of balanced activities by the Association in all aspects of the public health program."

To prepare itself to draft a first report on such a program the Board, after full discussion, set forth a statement of its concept of health, some problems of public health today, and certain broad approaches which it believed would be helpful in seeking ways and means of meeting these problems. This statement, prepared by a working party under the chairmanship of Dr. Roscoe P. Kandle, is as follows:

"The Technical Development Board assumes a broad definition of health as expressed by the World Health Organization and others, and it emphasizes also the broad concept of health as a major dimension of man's adaptation to his environment. It thinks of *public health* equally broadly, as the science and art of preventing disease and disability; prolonging life and promoting physical and mental health and efficiency through organized community efforts. To the elements usually covered by such a concept the Technical Development Board adds the responsibility for cooperation with others in the development of all the

essential prerequisites necessary for the maintenance of health, including the restoration of the sick or disabled to the greatest degree of well-being and activity possible.

"The Technical Development Board recognizes that there are many new areas of present concern to public health that require greater attention, as well as many traditional areas of concern in which there must now be changes of emphasis and new approaches. These new areas include those already identified and included in public health programs at least to some extent, such as radiological hazards, adult health maintenance, alcoholism and drug addiction, air pollution. They include extensions of present concerns in public health, such as the prevention of accidents resulting in trauma and poisoning; the improvement of patterns of administration and of availability of medical care; problems of food processing and additives, and many other aspects of total health. The Technical Development Board realizes that, of course, not all areas requiring a new approach can be known now.

"The Technical Development Board recognizes that there are major social, technological, and economic forces which influence health, and that ways and means of getting at the public health problems resulting from these new forces must be found. These forces include population changes, genetics, family life in the changing environment and its pathological manifestations, automation in business and industry, urbanization, suburbanization and metropolitan area problems, housing, etc.

"In seeking ways and means of meeting these problems the TDB emphasizes a number of broad approaches such as:

"The study of man as a biological and social being, in an environment which he is changing at an ever-increasing rate, utilizing more fully anthropology, the behavioral sciences, and combinations of bio- and physical chemistry and anthropology;

"The better understanding of the place of the private practitioner in public health and in the Association;

"The fuller use of the laboratory both to support programs and to gain new knowledge;

"More concern with the public's understanding of and appreciation for public health, utilizing such methods as attitude studies and communication technics;

"Expansion of efforts and improvement of effectiveness in recruitment, professional education, and training of personnel;

"Special study and demonstration methods for retraining present personnel and overcoming the problems of obsolescence of current methods and activities;

"More complete generalization of community nursing services (often called combined nursing services);

"Identification and promotion of necessary research;

"Fuller and better use of statistical methods;

"Exploration of methods for further development of such devices as local health councils;

"Evaluation of public health practices, including reassessment of current activities."

As a second step a working party of the Board functioning under Dr. Lester Breslow has drafted a statement describing a long-range balanced program, elements of which should be initiated in the immediate future. Recognizing its importance as a policy statement, the Board has reviewed and discussed it on several occasions. The report which is the outcome of these efforts (Supplement No. 1) is attached. Each member is urged to scrutinize this statement with care and to comment to TDB if it stirs reaction or stimulates thinking (as it is intended to do).

The Board, because of its very composition, is well aware of the program that has been undertaken in recent years and that which is now under way through committee action. It is, however, inadequately informed about the work of Sections and Affiliated Societies and Branches, but hopes to learn more about their activities during the coming year.

The Board appreciates full well that a program of balanced activities for the Association cannot be a static one. Move-

ment and progress in its scope and content to keep abreast of our rapidly changing environment and social values will be the essence of its long-range success if measured in terms of improved health of the people.

Furthermore, the Board is concerned that the program of the Association should, in part at least, be of such a nature that the membership can participate in it and that Affiliated Societies and Branches may contribute to it.

A second function of the Technical Development Board is to suggest the establishment of new committees as desirable. In order to set a basis for constructive and well considered action, several individuals were invited to appear before the TDB to present for its consideration materials on specially acute or new program needs and the Board is currently active in defining the role of public health and need for further action on the part of the Association as a result of these appearances. Subjects under consideration include public health aspects of alcoholism, disaster health services (including civil defense), staphylococcus infections. Owing to the immediate urgency of the last subject, a working party under the chairmanship of Dr. Robert Korns has already been charged with responsibility for recommending to the Board what the role of the Association should be for formulating a statement of recommended public health practice in the prevention and control of staphylococcus infections and for assisting in the immediate development of a new and revised section on the problem of staphylococcus infections in the APHA manual, "The Control of Communicable Diseases in Man."

The task of coordinating activities of existing committees of the Association has been developed by a working party under the chairmanship of Dr. Samuel M. Wishik and is entitled "Procedural Relationships Between the Technical Development Board, the Program Area Committees, and the Standing Committees on Research Policy, Evaluation and Standards, and Professional Education." These relationships are designed both to coordinate and facilitate the work of the various committees. The importance of full communication between committees is noted; means of channeling reports, reporting to the TDB, and the sponsoring of publications are included. The entire report of the working party as adopted by TDB is attached as Supplement No. 2. In addition, a working party convened by the chairman of the Board and composed of the chairmen of the Standing Committees who are members of the TDB and of the Program Area Committee on Public Health Administration has prepared a statement on "Intra-Association Relationships in the Development of Standards" to serve committees and Sections as a working guide for the preparation and processing of reports containing standards or methods of evaluation. Since "standards" are required as bench marks for use in evaluation of any program of action, be it in the laboratory, administration or field service, the use of the term "standards" may be interpreted to include "evaluation."

The coordinating function has also been exercised through the appointment of joint working parties—joint in the sense that they have frequently included representatives of several committees represented in the TDB and also individuals from various sections and selected experts, not members of the Association. Detailed minutes of each TDB meeting are confidential and available only to members of the TDB for reference and for interpretation to subcommittees of the actions by the Board. However, abstracts of minutes of the TDB meetings are regularly sent to the Section secretaries, secretaries of Affiliated Societies and the Executive Board and are available for the Program Area and Standing Committees and interested

individuals in an effort to inform the members of TDB activities and plans and to assist in coordinating the affairs of the Association. The Board has also arranged conferences and promoted the exchange of documents between chairmen of various Program Area Committees and Standing Committees. Believing that it would be most useful for the TDB to be informed about other activities of the Association, it has urged and the staff of the APHA has undertaken to obtain, assemble, and organize reports of activities from Sections, Sectional Committees, Association representatives to other organizations, Association members to joint committees. It is planned that a summary gleaned from these reports may be used not only to inform the members of TDB but the membership at large of the manifold and highly significant activities conducted by various portions of the Association.

Highlights of Program Area Committee Activities

Accident Prevention

This committee envisions itself as filling four major roles. These are a development of policy determinations for adoption and implementation; the elucidation of studies, investigations, and research projects to be stimulated by the Association; the promotion of accident prevention activities, especially in local, state, and federal health departments; and the coordination of accident prevention activities within the APHA and in the United States through liaison relationships. It has specifically undertaken several tasks as follows:

Accident prevention teaching and training in 35 medical schools have been investigated and recommendations for improvements in teaching of accident prevention and training of personnel are being developed. The committee is assisting in the development of a teaching guide which was specifically requested of one committee member, Dr. Goddard, from officials of Medical Education and National Defense. A subcommittee is continuing its work in finding "common denominator" definitions for various accidents through development of a standard nomenclature of accidents and accident prevention. Resolutions have been developed and submitted for consideration by the Governing Council for: (a) widespread use of seat belts in automobiles, (b) public health cooperation and encouragement in obtaining nationwide coverage of driver training courses, and (c) public health participation in the establishment and improvement of local emergency squad services. An up-to-date inventory of state and local health department accident prevention activities is scheduled for completion by June 1, 1959.

Child Health

Committee has published eight of its proposed 11 guides on health services for children. Those already published include the following: Health Supervision of Young Children, Services for Handicapped Children, Cerebral Palsy, Cleft Lip and Cleft Palate, Dentofacial Handicaps, Hearing Impairment, Vision and Eye Problems, and Epilepsy. The remaining three guides in the series are in manuscript form with prospect of early completion. They cover the problems of services for children with emotional disturbances, heart disease and rheumatic fever, and orthopedic handicaps.

Chronic Disease and Rehabilitation

Committee has made substantial progress on preparation of a manual on "Elements of a Chronic Disease Program for State and Local Health Departments." The committee envisions itself as having other responsibilities such as maintenance of close working relationships

between the committee and various voluntary and official agencies interested in chronic illness.

Environmental Health

Committee is working on a refinement of program analysis and guide to environmental health, emphasizing in particular a new concept of environmental health program by health departments which will foster four degrees of environmental health, namely, survival, prevention of disease and poisoning, efficiency and performance, comfort and enjoyment. The committee is developing a record system and record form for environmental health activities, and is formulating a statement regarding qualifications and the quality of personnel for environmental health programs, and a statement of radiation hazards in the environment which will include health department responsibilities (environmental) to protect the public against excessive exposure to radiation.

Medical Care Administration

Committee has been relatively inactive during the year. Its work has been concentrated on the development of a policy statement regarding voluntary health insurance, a policy statement on the relationship between medical rehabilitation and cash disability benefits, and has under consideration a possible study on the relationship between health and dependency with special reference to the medical care of the aged.

Mental Health

Committee is very actively engaged in developing an extensive guide on the prevention and control of mental disorders. It has organized several subcommittees which have been actively at work on their portion of the assignment. It is hoped that a special grant may be obtained to assist in completion of this. As a completed guide this manual will serve, it is expected, to stimulate extensive definitive and productive activities by official health departments and other agencies.

Public Health Administration

Committee is developing a manual on the "Administration of Community Health Services" in conjunction with the International City Managers' Association and with the cooperative assistance of the U. S. Public Health Service. The outline for this manual has been completed and revised. On publication the manual will be available to all interested parties, including public health workers, city managers, and other interested persons. The APHA's "Guide to a Community Health Study" is actively under revision by a committee headed by Sewall Milliken with six separate task forces working on the various sections. The revision is about two-thirds completed and several of the completed sections have already been subject to sample field tests. A policy statement regarding APHA's role in field surveys is being developed. It is hoped that this may assist by suggesting ways in which the disparity between the large number of requests for surveys received and the number which may be accepted by the APHA staff may be resolved. Other ongoing projects include those relating to evaluation, local health services, policy statement on the function of health centers, and study of chemical poisoning.

Radiological Health

Committee has published a pamphlet on "Public Exposure to Ionizing Radiation" and has developed and distributed a statement of policy on ionizing radiations and two model acts designed for adoption by state legislatures. The effect of the pamphlet on "Public Exposure to Ionizing Radiation" is attested to by the fact that it has been in great demand and the first two printings have been virtually exhausted. The committee is

currently at work revising a guide-line statement on radiological programs for local health departments.

Most of the Program Area Committees have one or more additional meetings scheduled during the time of the Annual Meeting and will probably make substantial further progress so that inquiries directed to committee chairmen may reveal further progress of interest to individual members of the Association.

Summary

It is with great pride in this Association, its members, and my fellow workers on the Technical Development Board that I present this report. Our progress represents a substantial beginning in our objective of making this Association a better coordinated, more driving and significant force in this nation. These efforts will, we hope, result in improved quality and quantity of public health efforts through the setting of standards and evaluation of technics and services, by advancing the periphery of public health activities to encompass new and emerging problems, to apprehend and utilize newly developed knowledge and technics, and to adjust constructively to a rapidly changing physical, chemical, and human environment.

We must communicate to the membership and the public health workers everywhere our thoughts and reflections resulting from our overview of the current and ongoing activities of public health. This and our other functions will surely serve to stimulate and support individuals engaged in public health by illustrating to them the significance and importance of their work so that each worker may take great pride in being part of the public health movement.

This, then, is the report of the first full year of work by the Technical Development Board. What appears to be an effective method of work is evolving. In the four meetings that have been held during this year, and through the devoted labors of its members in working parties in which many policy points have been clarified, a strong feeling of singleness of purpose in serving the Association has emerged. Members of the Board have demonstrated how a group of members of the Association with widely divergent particular program interests can work together to formulate recommendations on general program policy for the Association as a whole that, we hope, will affect favorably the health of the people of our nation. As this program develops it is my hope that the Board can extend this process and, through its study of the health and related social and economic needs of all our people and an understanding of our own culture and social situation, grow in understanding of the health needs of the people of other countries living under different cultural and social situations. Thus can this Association become a stronger influence in the attainment of health of all peoples of the world and take its place more effectively in the work of the World Health Organization and other United Nations agencies whose work is concerned in some way with health.

MARTHA M. ELIOT, M.D.
Chairman

BALANCED ACTIVITIES FOR THE AMERICAN PUBLIC HEALTH ASSOCIATION

*Supplement No. 1**

Introductory Statement

UNDERLYING the recent reorganization of the American Public Health Association that emanated from the Arden House Task Force Report was (1) recognition of significant changes that are taking place in the pattern of our national life and in the technology of disease prevention and health promotion, and (2) appreciation of the need for appropriate changes in public health concepts and practices in this country.

There are today in national and world affairs major economic, social, industrial, and technological forces that are changing the patterns of living of the peoples of the world. In this country technological developments have gone forward in recent years at a speed and scope that surpass all such previous developments. The Technical Development Board recognized as it started its deliberations on a program of "balanced activities for the Association in all aspects of the public health program" that the impact of these forces on public health† was an overriding consideration which should be given a central place in its planning, and that ways and means of getting at and dealing with the public health problems which result from these forces must be found.‡ Public health authorities generally are aware of the impact of these technological developments on their communities; they are familiar with the great shifts in population that are taking place; they recognize many of the effects on physical health, personality development, and family life of the "total changing environment" with its situations of stress and anxiety arising, for example, from international tension, from automation in business, and from the introduction of atomic energy.

The role that the APHA can play in the next five to ten years to assist the public health authorities of this and other countries in meeting the impact of these technological developments on the health of the people and on the patterns of family and community life can be very great indeed if all members and all Sections and committees will focus their programs, at least in part, on ways of overcoming or mitigating its effects in their respective fields.

The problem which the Technical Development Board faced in its task of preparing its first proposals on a program of balanced activities for the Governing Council was to choose from among the many and varied approaches to this overriding situation. It was necessary to select approaches which would lay the ground for a fresh examination of the impact of technological developments, stimulate methodological research, strengthen professional education, define more clearly the role of public health organizations in the provision of medical care, and open the way for continuing exploration of new and unforeseen health needs of the people.

Though the Board geared its con-

* A Progress Report by the Technical Development Board to the Governing Council for 1957-1958.

† The unqualified term "public health" is used throughout this report to mean the social institution which embraces all matters pertaining to the health of the people as individuals or in the aggregate. It is defined more specifically on page 96 of "The Report of the Chairman of the Technical Development Board to the Governing Council 1957-1958" to which this Progress Report is Supplement No. 1.

‡ Ibid, p. 97.

siderations to a five-year period of development, it soon became evident that for its first report choices must be narrowed from a wide range of subjects to a few that would give sufficient latitude for exploration of the impact of technological and other new developments affecting many aspects of the public health. The proposals for "Immediate Expanded Activities of the APHA" which are presented in Part I of this report do give such latitude. They include:

1. Continuous appraisal and reappraisal of standards and guides for the purpose of reaching higher levels of achievement and improving quality of service and care;
2. Study of the geographic and administrative basis for local public health organization and its implications for more effective service to communities and individuals; and
3. Development of a detailed plan of action by the APHA for enlisting the cooperation of clinicians and other appropriate health workers, including persons responsible for giving and arranging for medical care, in the study of the distribution of medical care and in the establishment of standards of medical service in fields that have the greatest effect on morbidity and mortality rates.

In addition, the Technical Development Board places upon the entire APHA membership, its committees, and Sections the provocative role of seeing to it that the TDB and other units of the Association miss no opportunity or responsibility in taking action to meet pressing problems and to prepare for and take part in imminent events.

In Part II of this report the TDB looks at some of the broadening horizons of public health and makes certain proposals for its own future activity.

The Board, then, sees as its most important function that of constantly being alert to changes in the national and international scene which have implications for public health and to which the Association and its members should respond. The Board will call to the attention of the Association, its governing bodies, or any of its Sections or committees new developments which are considered important and which demand consideration, study, or action. In turn, the TDB will call on the members and the various committees and Sections of APHA to assist it in its activities.

In carrying out its function of advising the Governing Council on "a program of balanced activities for the Association," the Board will take cognizance of the existing activities of committees, Sections, and Affiliated Societies and Branches. The Board does not see its function as that of performing major work tasks which should be carried out by committees and Sections; nor will it assume routine duties which should be the function of staff. Rather, the TDB will seek to maintain an overview of the public health setting and of the Association's activities. Based on this overview the TDB will undertake coordination, development of emphases and priorities for existing activities, and stimulation of new activities.

This supplement to the 1957-1958 Report of the Technical Development Board is intended to bring to the Governing Council some results of the first year's deliberations by this Board on the subject of a program of balanced activities for the Association. It is by no means a finished product, but is the first of a series of reports that will come from the Board to the Governing Council. The subjects discussed here require further exploration. They and many others will be considered in subsequent reports to the Governing Council and the Association.

Part I—Immediate Expanded Activities of the APHA

In selecting the areas for expanded activity for the APHA, the Technical Development Board gave first consideration, as has been pointed out in the Introductory Statement, to the impact of technological change on the health of

people and on family and community life. The existing program and the traditional areas of successful Association action were well known to the members of the TDB.

The APHA is moving at a rapid pace today, as attested by the reports of various activities and accomplishments being made this week by the Standing and Program Area Committees, by the Sections and Affiliated Societies. This movement will have to be sustained and steadily increased if the Association is to fulfill its role as the spokesman for the people's health and exert the leadership desired of it. The expanded activities proposed in this portion of this progress report are intended, then, to augment rather than to supplant or discourage activities that are already proceeding.

1. Standards

Being alert to changes which result from technological developments and have implications for public health will have meaning for future action only if such alertness rests solidly on knowledge and experience revealed through research and evaluation of current practices, and on willingness to modify standards as they become outmoded.

Changing conditions require new standards and new emphases in the application of standards. For example, standards of water quality have in the past placed principal emphasis on bacteriological factors, but recent years have brought a heightened need for standards relating to the chemical quality of water. Continuous reassessment, development, and elevation of standards are necessary to meet changing conditions as they arise. Meaningful evaluation and improvement of programs flow from and are dependent on comprehensive and thoughtfully developed standards. Wide variation exists in different parts of the country in the extent to which we are doing what we already know how to do for the advancement of the health of the people. By spelling out standards public health workers can help communities attain a higher level of achievement in areas where there are deficiencies. To a considerable extent agreement can be reached on the best practices within present knowledge.

Emphases in the Development of Statements on Standards

Standard setting has long been a traditional and important contribution of the Association made through action by its various committees. In the continuation of that tradition, a number of emphases are needed to assure statements on standards that will be well-rounded, broad in concept, and applicable to current need. They are:

1. At each step of development of standards contributions should be drawn, as appropriate, from individuals who have professional technical experience and wisdom to make good judgments. Such persons should represent various professional fields including clinical medicine particularly, but also administration, engineering, epidemiology, laboratory skills. They should be drawn from various biological sciences, such as physiology, biochemistry, genetics, embryology, and from the behavioral sciences, such as anthropology, social psychology, sociology, and economics.

2. Standards should seek to make more precise our definitions of the threshold of morbidity, as they pertain to the health of an individual and widen the range of physical and mental conditions which may be attacked by the use of public health methods.

3. Quality as well as quantity of programs should be included in standards.

4. There should be provision for the evaluation of effectiveness of programs for which standards are set, with special attention to delineation of critical key indexes for evaluation.

5. Attention should be given in devising any statement of standards to assure that they meet as fully as possible the needs and problems of individuals, families, and communities.

6. Attention should be given to the problems of population groups which are at special risk.

7. To lay the basis for standards, proposals should be made, as needed, (a) for research designed to augment knowledge required for

their development; and (b) for new methods of operation that require trial through pilot testing. Such proposals should be communicated to the appropriate Standing and Program Area Committees.

Recommendations

It is recommended that the entire membership of the APHA as individuals, and through Standing and Program Area Committees, Section Councils and Committees, and other organized units, be alert to the significant role played by statements on standards in advancing the health of the people, and give attention to the need for and the preparation of new or revised standards to fill gaps in their respective field.

Each committee and Section should maintain an interest in both standards and evaluation and a sense of responsibility for their development.

It is essential that the Committee on Evaluation and Standards be kept informed of the work or proposals of all other Association committees and Sections which involve the setting up of recommended standards. The Committee on Evaluation and Standards will cooperate with appropriate units of the Association in the development or revision of standards. The Technical Development Board has the responsibility to assure that there is agreement between reports and/or standards which emanate from different committees or Sections of the Association.

2. Geographical and Administrative Basis for Local Public Health Organization

For many years the APHA has adhered to the dictum that local public health services should be tied to local government. This concept has served a useful purpose and in many parts of the country will continue to do so. However, continuing changes in the distribution of population, particularly the rapid growth of the great metropolitan areas, the development of differentiation between central cities and suburbs, the increased mobility of population within these areas, now raise insistently the question as to whether public health authorities should invariably continue their attachment to local government as now generally organized.

Another factor compelling attention to this problem is the failure after many years of effort to establish full-time, comprehensive, local health services in large sections of the country.

Many public services such as air pollution control, rapid transit and public utilities are being established with authority extending over several counties and even crossing state lines. The design for public health services, too, may need to be remodelled.

Recommendations

It is recommended that the Program Area Committee on Public Health Administration give urgent attention to the geographic and administrative basis for local public health organization.

In its deliberation the committee is urged not only to draw on its own membership but to seek also the assistance of knowledgeable individuals both inside and outside the APHA. Special attention should be given to representation from the fields of political science and general public administration to supplement their own skills in public health administration.

This committee should study current patterns of local health department organization in the light of trends in population distribution, technological developments, such as automation and the introduction of nuclear energy in industry, shifting centers of trade, the industrialization of agriculture, and other factors, and should recommend desirable patterns for the organization of local health services in the several areas of the country. It should report its findings to the Technical Development Board not later than May 1, 1960, to allow adequate time for full consideration at the 1960 Annual Meeting of the Association.

3. Medical Care and the Public Health

Advances in medical care in the past two decades have greatly influenced public health services. A century ago (or even less) environmental sanitation, nutrition, conditions of work and other influences on health far outweighed the importance of medical care in the public health program. Recently improvements in the physical conditions of life and gains in medical science and practice have shifted the balance. For certain bacterial diseases, congenital defects of the heart, early forms of cancer and other conditions, medical care can make the difference between life and death, between health and chronic illness. For other common diseases, such as diabetes and glaucoma, medical care now staves off tragic consequences for many years if not indefinitely. These advances have given medical care a vastly greater significance to the work of public health agencies than it formerly had.

Those concerned with the organization of public health activities recognize this fact as indeed do all segments of society. Elements of the medical profession itself have given leadership in making the scientific advances more socially useful. For example, groups of physicians especially concerned with maternity care, the prevention of infant mortality, cancer, diabetes, tuberculosis, syphilis, blindness, heart disease, and numerous other conditions, have joined together to help control these conditions. Such groups of physicians seek to hasten the general application of advances in the science of medicine, to teach other physicians the latest developments in the field, to educate the public with respect to preventive measures, and to enlist public understanding and support. They recognize the role which public health organizations, governmental and voluntary, can play in achieving common objectives.

Likewise, economists, social scientists, physicians, public health personnel, and other professional groups have concerned themselves with the distribution of medical care, and with various administrative and economic problems involved in its distribution.

The question arises as to how the APHA should approach the problem of medical care at the present time when it is becoming such an increasingly significant element in community health.

Public health has five basic immediate interests in medical care as a means of achieving and maintaining health among the people generally:

(1) How much medical care is actually being received as compared with a standard of quantity, particularly by groups at special risk?

e.g. What proportion of pregnant women come under medical care during the first trimester?
What proportion of persons in a specified population are receiving care for diabetes?
What proportion of known tuberculous individuals are receiving medical supervision?
What proportion of persons who suffer from hemiplegia receive rehabilitation services?

(2) To what extent does medical care meet desirable standards of *quality?*

e.g. In prenatal care, is the urine routinely tested for albumen? In suspected diabetes, is the blood-sugar determined?
Is the tuberculous individual receiving the benefit of the full gamut of effective therapeutic procedures?
How soon after the onset of hemiplegia is rehabilitation started?

(3) What is the effectiveness of the specific medical services rendered to individuals?

e.g. To what extent does prenatal care prevent eclampsia?
To what extent does treatment of diabetes prevent complications from the disease?
Do tuberculous individuals achieve sufficient arrest of disease to return to useful life?
To what extent does rehabilitation aid persons with hemiplegia to walk?

(4) What is the community-wide effect of the medical care?

e.g. What is the perinatal mortality rate?

What is the life expectancy of diabetic individuals?

What is the rate of tuberculous infection?

What proportion of individuals suffer physical and social disability as a result of hemiplegia?

(5) Is vigorous research being performed to discover the bases for deficiencies in the quantity, quality, and effectiveness of medical service to individuals and on a community-wide basis, and to determine the promptness with which new knowledge is applied for human betterment?

Is such research the role of APHA, and should the Association spur or stimulate others to perform it?

Groups of pathologists, surgeons, radiologists, and other specialists are now advancing the fight against cancer; ophthalmologists against glaucoma; cardiologists against heart disease; dentists against periodontal disease; obstetricians and pediatricians against perinatal mortality; and general practitioners have formed an academy to raise the level of general practice.

At the same time public health personnel and organizations are developing technics and standards which are useful in measuring accomplishment. Such measurement can play an extremely important part in improving the quality, quantity, and distribution of medical care and thus in promoting individual and community health. It is notable that, with a few exceptions, accepted standards are lacking for the measurement on a population basis of the adequacy and effectiveness of medical care. Such standards are needed as a basis for comparison and improvement of the levels of care.

Recommendations

It is recommended that the APHA initiate and carry forward consultation with clinicians and other appropriate health workers, including persons responsible for arrangements for medical care, with a view to (1) establishing standards of medical service in the fields that have the greatest effect on morbidity and mortality and developing methods of measuring the extent to which medical and public health practice meet such standards; and (2) continuing study of the distribution of medical care, and establishing standards for measurement of the effects of that distribution on quality and quantity of care received.

These standards and methods of measurement should include not only specified treatable conditions, but also screening and diagnostic technics; treatment with antibiotic, tranquilizing and stimulating drugs; x-ray therapy; certain surgical procedures such as caesarean section and tonsillectomy; and other aspects of medical care which are important to the health of the people.

Research is required for the development of new methods of measurement of quality and quantity of medical care, including the effect of various administrative arrangements for obtaining and paying for service.

It is recommended that the Program Area Committee on Medical Care, in collaboration with the Medical Care Section and other appropriate Sections and committees, develop a detailed plan of action to implement this Association effort and report to the Technical Development Board not later than August 1, 1959, and earlier if possible. Since standards are to be developed, early consultation with the Committee on Evaluation and Standards should be arranged.

4. Pressing Problems and Imminent Events—Role of APHA

The APHA should continuously and vigorously explore and define its role and that of public health agencies in dealing with emergent health problems, and should act whenever its role for action becomes clear. In such action the APHA should seek the cooperation of other organizations and agencies concerned with the health of the people.

The Association has done these things in the past and is currently doing them; for example, in helping to meet the problem of staphylococcus infections in hospitals and communities; in delineating the role of health services in disaster;

and in pointing out health implications of the alcoholism problem.

Also numbered among the matters pressing for Association attention are similar exploration and definition of research needs and of professional education and training needs for all types of workers in public health. These last named matters are of sufficiently transcendent importance to be reported upon more completely in the near future by the Technical Development Board to the Governing Council.

Among the imminent public health events and pressing problems in which the Association must maintain an active interest in order to be ready to take suitable and well considered action are: the White House Conference on Children and Youth scheduled for 1960; the Fifth International Congress on Nutrition in 1960; the National Conference on Aging scheduled for 1961; problems of food additives, labeling, advertising (especially as illustrated by the use of "health" as a gimmick in advertising); the National Traineeship Program and federal legislation on training. Undoubtedly other critical and unanticipated problems will demand quick and responsive action by the Association. It is desirable that the APHA should plan its activities and develop its policy so that the number of "emergencies" will be reduced, and that the Association position on programs and issues will regularly be considered and clarified before the time for action arrives.

Recommendation

It is recommended that the entire APHA membership, its committees and Sections be alert to the need for Association preparation or action to meet pressing problems promptly and take part effectively in imminent events. They should each assume the provocative role of seeing to it that the TDB and other units of the Association miss no opportunity or responsibility in regard to such problems and events, by calling specific attention to the need and making recommendation for appropriate action.

Part II—Broadening Horizons and Proposals for Continued Action

A biosocial approach to health is needed. Biological sciences as a whole must play a significant role, not bacteriology and virology alone. Public health is already turning with more attention to physiology, biochemistry, genetics, embryology, and other branches of biology than it did in the past.

Modern social science in all its branches is equally important. We need to study more attentively the motivation of people toward health (social psychology) and the arts of communication, consultation, and supervision. A scientific approach to the problems of availability and utilization (sociology, economics) of community resources for health service is likewise important to health promotion and the restoration of the acutely or chronically ill to health. We need to explore more fully the value to public health practice of an understanding of interpersonal relationships and healthy personality development.

New methods of data collection about health and related characteristics, as in the National Health Survey, have drawn attention to methodology developed by social science (social survey technic).

To understand and promote health it is necessary to study population trends (demography) such as patterns of urbanization and suburbanization; the effects of automation; changes in family size, composition, and work patterns; increasing employment of women in industry; and the rising divorce rate. The increased tempo of culture mixing in American life (anthropology) likewise requires attention in the interests of health.

There is an almost imperceptible series of steps within the continuum between physical and mental health and physical and mental illness, and likewise between actions taken to correct health deviations, prevent disease, and promote

health. Up to the present time public health authorities have been mainly concerned with fatal diseases or those characterized by fever or identified by specific test. Within this health continuum greater attention must now be given by such authorities to the lesser impairments of physical and mental health which require a more sensitive recognition of morbidity than has been exercised in the past. Such a reduction in the threshold of morbidity means, for example, that public health authorities concern themselves with feelings of "under-par" due to air pollution, as well as with clinically recognizable disease due to air pollution or with the minor deviations from health in infancy and early childhood for which treatment is so often postponed; it means earlier case finding, prompter medical care, more effective treatment and rehabilitation, and more economical use of services; it means emphasis on aiding people to realize their maximum individual potential in life. To achieve the appropriate emphasis on health and minor deviations from health requires focus on people as well as on disease-causing organisms and environmental hazards. People must be studied in the entire milieu in which they function. It means that arrangements for earlier and more easily accessible medical care must be made where not now provided.

There is also a need for more quickly and sensitively detecting alterations in the environment which may favorably or adversely affect the health of individuals and for predicting such effects. Public health authorities have a strong stake in the promotion of conditions of work, those in the home or school, and during recreation, in which people can flourish. They must direct their energies against the things which interfere with a full measure of enjoyment and participation in life, as well as those which cause clear-cut disease in the clinical sense. The aim is to free people from the shackles of diseases and disorders which prevent them from realizing their maximum individual potential in life.

Recommendations

It is recommended that all Sections and committees of the APHA consider their responsibilities to advance understanding and public health practice in regard to these emerging concepts; and that

—the APHA take the lead in utilizing and calling to public attention the data bearing on the newer views of public health which are available from the National Health Survey and other similar studies.

The Technical Development Board proposes to establish an ad hoc study group, including members of the Board and social scientists, among others, to formulate in detail policies and proposals along the lines outlined above and particularly proposals as to how public health authorities and organizations should deal with a broadened spectrum of morbidity and the conditions of life which affect it. The study group should report to the Technical Development Board not later than June 1, 1960.

Concluding Statement

In conclusion reference should be made to one subject that so far the Technical Development Board has not discussed in detail, namely, the role of the Association in international health problems. For many decades the Association has been concerned with the health problems of people in other countries and has had many different relationships with international organizations, both governmental and nongovernmental. One area of concern which still has been given too little attention by other organizations as well as our own is the preparation of international health workers so they will have an understanding of the social institutions and cultural patterns of the people they seek to serve, and a corresponding

capacity to adapt health programs to go with rather than against the grain of the local sociocultural system. More and more, health personnel in our country will wish to contribute individually to the solutions of world health problems. As the major professional public health organization in the United States, our Association must give fresh consideration to what its obligations are to the international health program. The Technical Development Board will give this question consideration in the near future.

Lastly it should be repeated that this report must not be thought of as a definitive and final judgment of the Technical Development Board on the subjects reviewed, but an attempt to bring to the Governing Council the results of the first year's deliberations on a subject that has limitless possibilities.

The Technical Development Board has brought forward certain proposals for the immediate future. They are all recommendations that various units or the entire membership of the Association undertake work that should lead to improvements in our public health organization and practices.

If there is a resurgence of interest on the part of the entire membership of the Association in the development of its program, the position of leadership of the Association will be strengthened and, what is far more important, the people's health will be improved. The Technical Development Board hopes that each member of the Association will give careful study to the curent proposals, and if what they read provokes thought and discussion, the Board will be glad to know of it.

PROCEDURAL RELATIONSHIPS BETWEEN THE TECHNICAL DEVELOPMENT BOARD, THE PROGRAM AREA COMMITTEES, AND THE STANDING COMMITTEES ON RESEARCH POLICY, EVALUATION AND STANDARDS, AND PROFESSIONAL EDUCATION

Supplement No. 2

Purposes of Procedures

1. To coordinate activities of the above working units in the Association.
2. To review material from the above units for the Governing Council or Executive Board.
3. To give proper authority and status to the published statements of the Program Area Committees.
4. To minimize unwarranted delay and burden of excessive mandatory channeling of proposals and reports.

Principles to Be Followed

1. The TDB has responsibility for coordinating activities of all Program Area and Standing Committees represented on the Board.
2. Such responsibility does not give the TDB full control over the scope of work or the channeling of reports of these committees.
3. Relationships between and actions of the various units are based upon faith in each other's competencies to carry out

their respective roles and in their common interest in the welfare of the Association.

4. All units in the Association have free and direct communication with each other. The TDB should observe and encourage such free communication and should use its own restrictive powers sparingly (e.g., for undesirable duplication).

The three Standing Committees on Evaluation and Standards, Research Policy, and Professional Education, within their respective fields, are responsible for:

1. Helping the Association to define policies.
2. Looking at the total picture of their subject, by seeking answers to such questions as, for example, for the Committee on Evaluation and Standards, "What standards in public health have been developed; what standards should be developed next; and what standard-setting work is going on in the Association?"
3. Stimulating work done by other units in the Association.
4. Carrying out direct projects.
5. Being the unit in the Association to which the Association looks as the best authority on the subject.

Three Standing Committees—Channeling Procedures in Respect to the TDB

The three Standing Committees are responsible to and report directly to the Governing Council (Executive Board). To facilitate the coordinating responsibility of the TDB, these committees inform the TDB at certain points in their activities:

a. When a definitive new activity is being contemplated.
b. When a report is being rendered (by copy, preferably at a reasonable interval prior to sending the report to the Governing Council).
c. At other critical points, if any, as deemed desirable.

The Standing Committees also relate directly to other Standing Committees, Program Area Committees and Sections, always keeping the TDB informed about plans for joint activities. The TDB chairman and Association staff, the latter under the direction of the Executive Secretary, help to assure that additional appropriate units are kept informed.

The TDB may, if it wishes, send to the Governing Council or to the Executive Board comments on Standing Committee plans or reports.

The Governing Council or the Executive Board may refer Standing Committee proposals or reports to the TDB for opinion.

Program Area Committees—Channeling Procedures

Program Area Committees are responsible to and report directly to the TDB. The latter comments upon and forwards committee proposals and reports to the Governing Council or the Executive Board. TDB review of committee materials is expedited by use of small ad hoc working groups, which include representatives of appropriate Program Area or Standing Committees. If a Program Area Committee is not satisfied with TDB action, it may also elect to interpret its work by publishing reports directly, providing the majority of the committee and the chairman of the Executive Board approve.

In keeping with Principle 4 listed above, any Program Area Committee should freely explore possible fields of activity for itself alone or for cooperation with other Program Area Committees, Standing Committees, or Sections. It may not, however, launch a definitive activity alone, or in conjunction with another unit, without the approval of the TDB.

Copies of Program Area Committee reports should be sent to all appropriate units, preferably at a reasonable interval prior to their being forwarded to the Technical Development Board. The chairman of the TDB and the Association staff, the latter under the direction

of the Executive Secretary, help to assure that additional appropriate units are kept informed.

Standing Committees, on request or if they desire, may send comments on Program Area Committee reports to the TDB or to the Governing Council (Executive Board).

The TDB or the Executive Board may refer Program Area Committee reports to Standing Committees or to other units for opinion.

Sponsorship of Publications

Publications of guides or other statements on public health may bear the imprint of the APHA itself or of units of the Association. Selection of one or another aegis reflects the nature of the document, its purpose and the feasibility of detailed review at one or another level. The labeling of level of endorsement of a statement should be positive rather than negative, somewhat as follows:

Approved by the Governing Council (or the Executive Board) of the American Public Health Association

Issued by the Committee on.....and approved by the TDB of the APHA

Issued jointly by the Committees on .....of the APHA

Issued by the Committee on..... and approved by the Committee on Professional Education of the APHA.

Issued by the Committee on..... ....of the APHA.

Specific Recommendations Concerning Relationships Between the Standing Committee on Evaluation and Standards and the Program Area Committee on Public Health Administration

The word "evaluation" might be interpreted in various ways. Without doubt, the Committee on Evaluation and Standards will have to evaluate and retest some of the standards it promulgates. The process, however, of matching public health programs against such indexes is not the responsibility of the Committee on Evaluation and Standards, but rather that of the Program Area Committee on Public Health Administration. Still another activity, that of evaluation of the effectiveness of public health programs in terms of results rather than being matched against a standard or index, falls within the definition of research.

The Program Area Committee on Public Health Administration, among other activities, has traditionally been responsible for establishing evaluative indexes for the administration of public health programs. This should continue to be an activity of this committee.

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EDUCATIONAL QUALIFICATIONS OF PUBLIC HEALTH VETERINARIANS

I. General Scope of the Field

Veterinary medicine has made many important contributions to the health of man. Our civilization has profited greatly from the recognized work of such scientists as Koch, Pasteur, Curtice, Kilbourne, Smith, Loeffler, Frosch, Bang, Hall, and Mohler. Their research in the field of veterinary science which was begun with imagination, conducted with industry and persistence, and followed to logical conclusions, has paved the way for many new means of protecting and improving the health of human beings. Analysis of their work in the early identification of bacteria and viruses, in the initial development of protective vaccines, in the recognition of arthropods as vectors of disease, in the development and application of practical diagnostic tests using antigens, in the development of methods to treat and control parasites common to man and animals, and in the development of improved methods and higher standards for meat and milk hygiene, reveals the scope and magnitude of the work and the resulting effects on our health and well-being today.

Today, as in the period of these accomplishments, multiple problems are associated with preventive medicine. The fact that most disease agents may affect or reside in several host species, and that this may be accomplished by the organism selectively adapting itself to new hosts, indicates that these problems cannot be solved on a single host basis, nor can they be arbitrarily segregated into areas of human or veterinary medicine. To state that a disease affects only one species of animal or that a disease of animals does not affect man is to ignore the modern concept of disease ecology and prevention. The host-parasite relationship and the selective adaptations of disease agents to new hosts is dynamic rather than static. There is always the probability that future discoveries will alter present concepts of disease and health. The list of diseases capable of affecting both man and animals continues to grow.

The epidemiological findings, the diagnostic tests and protective biologics for zoonoses, and the proved and established control measures for certain livestock diseases have resulted not only in the provision of an abundant supply of foods and animal products, including pharmaceuticals for man, but also in controlling and reducing the incidence of many of the zoonoses, e.g., anthrax, brucellosis, tapeworms, tuberculosis. Through the reduction of disease in the animal population, efforts of veterinary medicine are helping to reduce the opportunities for animal diseases to be transmitted to the human population. Examples of this work include the reduction of bovine tuberculosis in the United States from 5 per cent in 1918* to 0.15 per cent in 1957 and the current nationwide program in the eradication of brucellosis which has reduced the occurrence of this disease in cattle from 11 per cent in 1935 to an estimated 0.66 per cent in 1957.

Approved by the Governing Council of the American Public Health Association October 30, 1958, on recommendation of the Committee on Professional Education. This report is a revision of a Report on Educational Qualifications of Public Health Veterinarians approved by the Governing Council on October 31, 1951, and is intended to supersede the earlier report.

* Many counties in northern United States had infection rates that ranged from 25 to 50 per cent. In the South and the West the rate was 1 to 2 per cent.

Research in the field of veterinary medicine is furnishing and will continue to furnish information that will provide new approaches and new procedures for future programs of preventive medicine and the protection of human health.

II. Future Outlook

The field of veterinary public health and comparative medicine offers many opportunities in public service and research. Health officers have recognized the contributions to be made by public health veterinarians and are integrating their services with public health programs.

While challenges in the field of communicable disease control are being met with ever greater vigor and success, many problems still exist, especially among the zoonoses. Questions are still unanswered regarding rabies, toxoplasmosis, Q fever, psittacosis, leptospirosis, to mention a few specific diseases. In addition there is opportunity for research in the field and in the laboratory with the newly recognized influenza-like enteroviruses and myxoviruses which are found in both man and animals.

There are other important areas besides the zoonoses to which the veterinarian is prepared to make valuable contributions. Among these are studies on the effects of air pollution on both animals and man in the same rural and urban environments. It is possible that air contaminants produce the same pathologic changes in animals as in man and that animals may, in effect, serve as sentinels for the presence of noxious substances. Similarly this would be applicable to radiological fall-out problems. Certain biologic effects of fall-out detection have already been demonstrated in animals and animal products, such as milk. Continued vigilance for increased levels of radioactivity in animals is of immediate concern to public health. Because of his broad professional training including radiology the veterinarian qualifies for further training in radiation health. The civilian use of radiobiology in the control of animal diseases and in the preservation of food is a new development which will be of especial concern to the public health veterinarian. Radiobiologic projects already include trichina sterilization, and the processing of certain foods. Civil defense agencies also find a need for veterinary services in many areas.

Veterinarians and members of other professions who specialize in food hygiene have raised many questions about the indiscriminate use of additives in food without prior evaluation of their effects on human health. This is a public health problem that challenges the specialist in food hygiene. Meat and poultry hygiene must also be reviewed with particular reference to the prevention of communicable disease as well as to the problem of additives or growth stimulants and the development of standards for the safety and wholesomeness of meat and poultry.

Rural health programs will have an increasing need for public health veterinarians in the immediate future. Precedents have already been established by agricultural-medical groups studying health problems of our rural population. To expedite the application of new knowledge of disease control in rural areas the services of veterinary practitioners are being utilized in local health activities other than inspection programs.

Though, to date, the contributions by the veterinarian to chronic disease and geriatric programs have been limited, veterinary practitioners, veterinary research clinicians, and workers in basic veterinary sciences all have data that may be of value to these programs. This material should be compiled and made available to workers in the field. Research programs should be integrated and coordinated so as to serve both the

human and veterinary aspects of chronic diseases and geriatrics. This area will no doubt develop rapidly and will require special attention from veterinary public health workers.

As veterinarians in the field of public health become more experienced they are eligible for higher level administrative positions in health departments. This has been recognized and the future should present more such opportunities.

III. Functions of Public Health Veterinarians

The public health veterinarian is responsible for that field of activity which protects and advances the health of man by utilizing the knowledge and resources concerned with the interrelationships of animals and human health. His sphere of activity includes the planning, conducting, supervising, and coordinating of community efforts for the improvement of health and well-being of man. The public health veterinarian's efforts are directed toward improvement of public health by application of his professional knowledge in coordination with other public health competencies.

The public health veterinarian is responsible for a broad variety of functions which depend on the problems of the area and the scope of the agency with which he is associated. The functions listed below are illustrative of some of his activities and responsibilities at the local, state, or federal level. Any one position may not include all these functions nor will all functions necessarily be listed. The functions include:

1. Promotion of veterinary public health activities in urban and rural environs to prevent and control those animal diseases that are transmissible to man by direct contact, indirectly through food products, or by insect vectors.

2. Consultative and field assistance in health administration to obtain the maximum professional contribution of veterinarians in the areas of public health relating to veterinary medicine. For example:

> As a staff function the veterinarian advises the health officer and other divisions of the health department in the areas where his broad professional training in biology, medicine, and public health can be applied to the planning and development of programs.

3. The epidemiological estimation of public health dangers and problems arising from the diseases of animals.

4. Development and maintenance of animal disease reporting and statistical services for the evaluation of the danger presented by the zoonoses and of the procedures employed for their control and prevention.

5. Participation in the planning, promotion, coordination, and supervision of programs related to the inspection and hygiene of milk, meat, and other food and the application of biological principles to the production, processing, and distribution of food products.

6. Planning and participation in laboratory and research activities in the field of comparative medicine, including diagnosis, epidemiology, epizootiology, microbiology, production of biological products, and all aspects of comparative pathology.

7. Active participation in the definition of radiation hazards and in the planning and promotion of programs for the prevention or alleviation of radiation hazards as they may affect the interrelationships of human and animal health.

8. Enlisting the cooperative participation of private veterinary medical practitioners in urban and rural community public health problems. Liaison with the veterinary medical practitioner. Promotion of various programs such as

accident prevention, selected animal disease prevention and control programs, milk and meat hygiene, and general health in the community.

9. Active participation in cooperation with health education personnel in the planning, promotion, and development of health education programs relating to veterinary public health activities and the public health needs in the community and participation in the development and enforcement of health laws and regulations.

10. Consultation and liaison with voluntary and official organizations at local, state, and federal level, as well as enlisting the cooperation of the departments of agriculture and conservation in the prevention and control of animal diseases affecting the public health. For example:

(a) Provision of consultative services to the Public Health Service, state and local health officers, and other departments of government, medical and veterinary medical practitioners, animal and food industries, universities, and the general public;

(b) Cooperation with farm and rural organizations for the control of health hazards peculiar to agriculture in the improvement of rural health;

(c) Consultation and liaison with agriculture and conservation departments in the prevention and control of animal diseases affecting the public health.

In any program to influence and benefit the public health, both from an investigational viewpoint and by development of feasible solutions, the ten areas of activity listed require the biological approach, the concept of group or community health, and the use of the principles of comparative medicine, pathology, bacteriology, and physiology. The veterinarian has been taught to approach problems in terms of the herd or the flock, and thus has been trained in the public health and preventive medical concept of considering the group or the community as a unit.

IV. Educational Background and Experience of Public Health Veterinarians

Professional training in veterinary medicine leading to the D.V.M. degree is a basic requisite. Preveterinary college training (two-four years) providing a background in the sciences and humanities is required for entrance to schools of veterinary medicine in the United States that are approved by the American Veterinary Medical Association. Completion of a four-year curriculum leading to the degree of doctor of veterinary medicine in a school of veterinary medicine approved by the Council on Education of the American Veterinary Medical Association is acceptable evidence of such training. Graduates of veterinary medical schools of recognized standing outside the United States may be considered acceptable. These would be considered on an individual basis. Acceptability of the training should be referred for an opinion to the Council on Education of the American Veterinary Medical Association. A license to practice veterinary medicine is required in all states and anyone entering the field of veterinary public health should have become licensed following the conferral of the D.V.M. degree.

Completion of one academic year of postgraduate study in a school of public health accredited by the American Public Health Association or its equivalent is essential.

Practical field experience, preferably before commencing the public health course, is desirable. This is required by several of the accredited schools of public health before a degree is awarded. Field work should provide supervised experience in disease control and eradication, or in meat, milk, and poultry hygiene in a department or service that is recognized for interstate purposes or by state health departments. Of par-

ticular value is a period of supervised training in a health department to permit the candidate to determine whether he is suited for work in this field of veterinary medicine.

Prior to admission to a school of public health, the candidate for a postgraduate public health degree will have had fundamental training in veterinary medicine leading to the D.V.M. degree. Therefore, his efforts should be directed toward obtaining a professional public health education. The broadening influence available in a school of public health, of contact with members of other professions, and the opportunity for exchanging ideas, are of inestimable value. This exchange of ideas and understanding of the varied professions contributing to public health work is essential if the individual public health veterinarian is to bring to bear upon an over-all public health program the technics and professional training of veterinary medicine.

The training for public health veterinarians in a school of public health should include:

(a) Basic and specialized fields in which instruction is of particular importance to veterinary public health. These fields include epidemiology, bacteriology, parasitology, immunology, virology, tropical medicine, medical entomology, environmental sanitation, food hygiene, biostatistics, and radiology;

(b) Instruction in the general principles and practice of public health, e.g., public health administration and practice, public health laws and economics, and health education, in order that the veterinarian will understand and be able to contribute to the development of a comprehensive health program and to the solution of problems of the other professional groups in public health. It will also enable him to define his own activities more clearly.

In the schools of public health in the United States, the master's or doctor's degree is conferred on veterinarians upon successful completion of the program of study. Graduate education in schools other than schools of public health, leading to a master of science, doctor of science, or doctor of philosophy degree, may be accepted in certain cases. It should be shown, however, that the major subjects of study have direct application in public health. In regard to the training of veterinarians who will be concerned primarily with research laboratory work, similar degrees in science and philosophy are the most appropriate. Such training may be obtained in some of the schools of public health, medicine, veterinary medicine, or in the graduate schools of the larger universities.

An adequate period of full-time practical experience in increasingly responsible positions constitutes an essential part of the education and training of the veterinarian if he is to assume the direction of a veterinary public health program. In this connection, public health veterinarians, otherwise qualified, who have achieved notable success and who have had many years of full-time experience in an organized agency, may be considered as qualified even though lacking formal postgraduate academic training. However, it is to be emphasized that an exception to the requirements of a postgraduate course and supervised field training should be made only if the candidate has actually demonstrated his ability as a public health veterinarian by at least four years of constructive service.

V. Personal Qualities

It is desirable that professionally trained personnel in veterinary public health, responsible for administrative practices and policies as well as relations with the public, have personal qualities that will enable them to carry out their tasks. These should include adaptability, common sense, creative ability, sound health, good judgment, leadership, alertness, and enthusiasm for the field. Much of the success of the director of a

program of veterinary public health will depend on his capacity to establish favorable relationships, stimulate co-operative efforts, and earn the respect and confidence of those with whom he works.

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This is the first of the educational qualifications reports that, according to the new procedures of the Committee on Professional Education, has been circulated for comment before publication in the American Journal of Public Health. Of more than 100 persons with special interest in the training and practice of public health veterinarians—faculty members of schools of public health and schools of veterinary medicine, members of the American Board of Veterinary Public Health, officials of the American Veterinary Medical Association, and veterinarians in state health departments—to whom the proposed report was sent, replies were received from 41. The present report was revised in the light of their comments. The Committee on Professional Education expresses its thanks to these many persons who have helped in the preparation of this report. It joins with the subcommittee in special appreciation to Robert D. Courter, D.V.M., of the Public Health Service Communicable Disease Center, and secretary, Conference of Public Health Veterinarians, who was co-opted by the group as secretary to the subcommittee.

National Health Survey Concepts

The framework in which the National Health Survey is being conducted is described in "Concepts and Definitions in the Health Household-Interview Survey." This is a necessary tool for those who are using the data from the health survey and drawing conclusions from them. Public Health Service Publication No. 584-A3. Gov. Ptg. Office, Washington 25, D. C., 30 cents.

ASSOCIATION NEWS

Official Acceptance of Plating Media for the Agar Plate Method

The current edition of "Standard Methods for the Examination of Dairy Products" recognizes either the Bacto B-479 dehydrated plate count agar or the BBL 298, dehydrated milk protein hydrolysate glucose agar as being satisfactory for preparation of plating medium to be used in the examination of milk and cream. Provision is made for the acceptance of other media to be used for the same purpose by the following:

"Before official use as a basis for determining Standard Plate Counts, all ingredients alleged to give 'equivalent results,' 2.16 a, b, etc., should have unqualified approval for such use by appropriate Committees on Standard Methods of the American Public Health Association."

The Coordinating Committee on Laboratory Methods has had under discussion for several years the matter of a routine periodic check and certification of total plate count media. Through a subcommittee under the chairmanship of Leon Buchbinder, Ph.D., a plan for testing and applying statistical analysis to the test results was developed to provide a measure of the ability of any plating medium, or any batch of an already accepted plating medium, to meet the requirements set forth in "Standard Methods for the Examination of Dairy Products."

The Case Laboratories of Chicago has asked for approval of its No. 411 plate count agar as meeting the requirements of "Standard Methods." Specimens of the Case medium have been tested in a laboratory approved by the Subcommittee on Standard Methods for the Examination of Dairy Products, Luther A. Black, Ph.D., chairman, and the statistical data have been analyzed in the University of Michigan School of Public Health. An independent statistical analysis was conducted by the subcommittee. Both statistical studies show that the test results of the Case medium meet the requirements previously established by the Coordinating Committee.

The Subcommittee on Standard Methods for the Examination of Dairy Products has recommended acceptance of the Case plate count agar as being an equivalent medium to those specified in the tenth edition, "Standard Methods for the Examination of Dairy Products," for determining standard plate counts of milk and cream. The Coordinating Committee on Laboratory Methods approved this recommendation which was concurred in by the Committee on Evaluation and Standards during the 86th Annual Meeting.

I herewith acknowledge the receipt of the summarized recommendations of the Subcommittee on Standard Methods for the Examination of Dairy Products with approval of such recommendations by appropriate committees of the Association. On behalf of the Association I hereby announce acceptance of the optional use of either of the two dehydrated media referred to in the tenth edition of "Standard Methods for the Examination of Dairy Products," or the Case medium referred to above, for making standard plate counts on milk and cream by the agar plate method, effective October 27, 1958.

BERWYN F. MATTISON, M.D.
Executive Director

Scientific Exhibits Win Awards—St. Louis Annual Meeting

At the 86th Annual Meeting in St. Louis, Mo., the Committee on Scientific Exhibits, Sol Lifson, chairman, evalu-

ated 65 scientific exhibits with the assistance of 15 observers, most of them from the Public Health Education Section.

The committee awarded certificates of merit to eight scientific exhibits which were sponsored by:

Aetna Casualty and Surety Company
Alaska Department of Health
Boy Scouts of America
Division of Dental Public Health, U. S. Public Health Service
International Cooperation Administration
Liberty Mutual Insurance Company
Pennsylvania Department of Public Health
Philadelphia Department of Public Health

RESOLUTIONS

The following Resolutions were unanimously adopted by the Governing Council, American Public Health Association, at its Eighty-Sixth Annual Meeting in St. Louis, Mo., October 30, 1958.

Support of Nursing Homes

WHEREAS, there is a nation-wide shortage of adequate facilities for the care of the chronically ill, and

WHEREAS, achievement of effective health services for the chronically ill requires the development of nursing home facilities operated where feasible as parts of, or in close affiliation with, approved hospitals, therefore be it

RESOLVED, that the American Public Health Association:

1. Urge state and local health departments to take such steps as may be necessary to raise the standards of nursing home care through establishment and enforcement of adequate licensure laws and through the provision of professional consultation services to nursing homes;
2. Recommend that state and local health departments encourage the construction of suitable facilities for nursing homes and homes for the aged under the auspices of, or in affiliation with, approved hospitals;
3. Support proposals for provision of federal aid through grants or loans for the construction of nonprofit nursing homes and homes for the aged which will meet state standards and such federal standards as may be conditions for receipt of federal aid;
4. Encourage further efforts by insurance plans to develop extended benefit programs for patients who need care in a nursing home and other types of long-term care.

Quality of Medical Care

WHEREAS, high quality of medical care is one of the essentials for effective health service, and

WHEREAS, the contributions of numerous professional organizations and regulatory bodies devoted to the improvement in quality of medical care are recognized and commended, and

WHEREAS, administrative practices and policies applicable to organized programs of medical care have an important bearing on the quality of such care, therefore be it

RESOLVED, that the American Public Health Association urge trustees and administrators of all organized medical care programs and group payment plans to develop and apply all reasonable policies and administrative practices calculated to insure high quality of medical care services furnished through their programs and plans.

Public Regulation of Health Insurance

WHEREAS, most of the population requires and must depend upon insurance for protection against the costs of illness, and

WHEREAS, insurance funds are rapidly becoming a large proportion of total consumer expenditures for medical care, and

WHEREAS, personal health services are of fundamental public concern to maintain economic productivity, to prevent dependency, and to achieve desirable standards of well-being for the population, therefore be it

RESOLVED, that the American Public Health Association urge state regulating agencies

to give more consideration to questions of disease prevention, quality, quantity, community coverage as well as to questions of cost and financial soundness in health insurance plans. The Association further urges that this be achieved by experimentation as necessary, and by having such state agencies solicit suitable expert advice.

A Five-Year Census of the United States

WHEREAS, the distribution of the United States population continues to undergo rapid change; and

WHEREAS, an enumeration of the United States population every ten years is too infrequent to provide base population data of requisite currency for the efficient planning and administration of national, state, and local programs in public health, welfare, and education, as well as in other areas of public need, all of which involve huge expenditures of both public and private funds; and

WHEREAS, all these needs require reliable nation-wide population counts for states, counties, and cities which are unobtainable from current population surveys and estimating efforts, therefore be it

RESOLVED, that the American Public Health Association recommend a census of the United States at least every five years after the 1960 Decennial Census to provide, at least, counts by basic characteristics of the population in each county and municipality; and that other organizations with a special interest in demographic data be advised of this resolution.

Behind-the-Wheel Driver Training

WHEREAS, the effectiveness of behind-the-wheel driver training has been conclusively demonstrated, therefore be it

RESOLVED, that the American Public Health Association ask the state and territorial health officers and other interested groups to cooperate with departments of education and other state and local groups and agencies to make behind-the-wheel driver training opportunities available to all high school students; to encourage the development of behind-the-wheel driver training courses, meeting minimum standards of effectiveness, for all persons prior to the granting of an operator's permit; to all licensed operators who desire to take such courses; and to all licensed operators recommended by the courts for such training.

Use of Seat Belts in Automobile

WHEREAS, the effectiveness of seat belts in minimizing the degree of injury and the number of deaths resulting from traffic accidents, has been demonstrated, therefore be it

RESOLVED, that the American Public Health Association urge federal agencies and the state and territorial health officers and other interested groups of the several states and territories of the United States to encourage the equipping of all official city, county, state, and federal automobiles with seat belts which meet acceptable standards; and that every effort be made through technics of health education to encourage the wider use of seat belts by the general public in each state and territory.

Establishment of Air Quality Standards and Laboratory Procedures

WHEREAS, it is becoming increasingly evident that the volume of outdoor air to receive wastes is limited, and

WHEREAS, many official agencies, educational institutions, industries and research organizations are collecting air pollution data, and

WHEREAS, these data should be amenable to comparative study, and

WHEREAS, the lack of standard methods of air sampling and analysis makes such comparisons difficult if not impossible, and

WHEREAS, there are now no authoritative standards of quality for the community air supply by which to interpret the results of air quality measurements as to their public health implications, therefore be it

RESOLVED, that the American Public Health Association officially take notice of the urgent need for the early development and publication of standard methods of air sampling and analysis, and, of the urgent need for the early establishment of quantitative and descriptive standards of acceptable outdoor air quality for the entire population.

Federal Support of Air Pollution Research and Control

WHEREAS, the air we breathe is a natural resource that must be shared by all, and

WHEREAS, the limits of the atmosphere to dilute and disperse pollutants are being reached in some areas of the country, and

WHEREAS, pollution of the atmosphere may be expected to increase with the further growth and concentration of the nation's population, and with increased industrialization, unless remedial steps are taken, and

WHEREAS, there is evidence of deleterious effects of air pollution upon the well-being of individuals, and on property, agriculture, and transportation, and

WHEREAS, large gaps remain in scientific knowledge, and its application, about the nature, causes, effects, and control of air pollution, which will require extensive and costly effort, and

WHEREAS, the needed research on air pollution problems will lead to solutions of benefit to the entire country, and

WHEREAS, the staff required for the more complex air pollution research is in short supply and not readily recruited by state and local authorities, and

WHEREAS, the Public Health Service has initiated a comprehensive research and technical assistance program under the provisions of Public Law 159 of the 84th Congress, therefore be it

RESOLVED, that the American Public Health Association recommend the extension of the Air Pollution Research and Technical Assistance Act (P.L. 159, 84th Congress) beyond 1960, and that the existing limitation of five million dollars on annual appropriations be removed.

Grant for Water Pollution Abatement

WHEREAS, a study by members of the Conference of State Sanitary Engineers has shown that—

(a) many more communities could be stimulated to correct water pollution problems if more federal funds were made available, and

(b) the present top limit in Public Law 660 of $250,000 to any one project does not provide a substantial aid to large projects where the extent of pollution is frequently the largest, and

(c) present restrictions on multicity projects tend to result in a large number of small plants whereas long-range planning may indicate a single plant on an area basis, therefore be it

RESOLVED, that the Congress of the United States be petitioned to amend Public Law 660 with the view of increasing the effectiveness of the construction grants for sewage works programs through (1) increasing the total amount of the authorization and appropriation, (2) increasing the maximum grant provisions in proportion to any increase in the amount authorized, (3) authorizing municipalities to band together in constructing joint projects.

Planning Regional and Metropolitan Areas

WHEREAS, departments of public health have a basic interest in problems of water resource development, public water supply, recreational use of waters, agricultural use of waters, mosquito control, sewage disposal, reclamation of sewage and refuse, industrial waste disposal, fly control, public transportation, air pollution, safety and radiation problems, and

WHEREAS, in regional and metropolitan areas these problems are so interwoven that it is no longer feasible to deal with them separately, and departments of public health could render one of their best services in securing integration of these environmental factors in the over-all planning of an area, therefore be it

RESOLVED, that the American Public Health Association endorse the principle and urge departments of public health that are not so doing assume an active part in the over-all planning of regional and metropolitan areas and take steps to secure the modification or amendment of state laws to expedite action toward this objective.

Responsibility for Protection Against Radioactive Substances

WHEREAS, the health hazards of radiation rise from multiple sources and are cumulative and these hazards occur both in the general environment and in cases of special exposure, and

WHEREAS, the complexities of the problems created by radiation are the concern of several agencies at each level of government, and allocations of various responsibilities in the handling of these problems are not yet clearly defined, and

WHEREAS, one phase of the health protection problem is created by the licensure by the U. S. Atomic Energy Commission of persons and of public and private agencies to possess and use radioactive materials for peacetime purposes and by the choice of sites for reactors; and this Commission has publicly stated that health protection of the public should be the responsibility of a constituted health authority, therefore be it

RESOLVED, that the American Public Health Association urge the state health departments to formulate and secure necessary approval of plans for exercising their responsibilities for health in this field, including continuous surveillance of the level of hazard, and be it further

RESOLVED, that the American Public Health Association encourage the strengthening at both the federal and state levels of government of clear-cut working relationships between health agencies and the U. S. Atomic Energy Commission which will encompass all aspects of public health concern with activities of agencies, firms, or persons using radioactive materials, and be it further

RESOLVED, that the American Public Health Association urge the provision of funds from a variety of sources for research in the health effects of radiation, and for training of professional and technical health personnel in the field of radiation and nuclear energy.

Comprehensive Vector Control Programs

WHEREAS, the increasing prevalence of insects and other arthropods of public health concern, including pest insects, in inhabited areas in the United States is exerting a severe impact upon the health, comfort, and economic welfare of the exposed population, and

WHEREAS, the increasing development of resistance to insecticides among arthropods emphasizes the urgency of developing and implementing permanent control measures based upon source reduction, therefore be it

RESOLVED, that departments of public health undertake more active and comprehensive programs for the control of arthropods of public health concern with emphasis on source reduction.

Pretesting Proprietary Products

WHEREAS, numerous proprietary devices and compounds intended for sale to the public are continually presented to departments of health for appraisal or approval, and

WHEREAS, such devices and compounds usually have not been adequately tested as to either safety or effectiveness, and

WHEREAS, the public looks to the health agency to protect the purchaser from fraud or health hazard with respect to such devices or compounds, and

WHEREAS, existing statutes in most states do not afford this protection to the public except for drugs, insecticides, food additives, and agricultural chemicals, and

WHEREAS, adequate testing of such devices and materials is an expensive and time-consuming task, which should be borne by the proponent or owner, therefore be it

RESOLVED, that the American Public Health Association recommend that the principle be endorsed that before such devices or compounds are presented to health agencies for review or approval they shall be adequately pretested for both safety and effectiveness at the expense of the owner, advocate, or proponent.

National Water Supply Survival Plan

WHEREAS, the responsibility for problems of, and the planning for civilian survival in war related emergencies has been consolidated into a single federal agency, and

WHEREAS, water supply is essential for survival, and

WHEREAS, concern with water supply is a primary responsibility of health agencies at local, state, and federal levels, therefore be it,

RESOLVED, that the American Public Health Association urge health agencies at all levels, to participate actively in the development of a practical national water supply plan fully utilizing their resources to insure availability of sufficient usable water for civilian survival in stricken areas.

White House Conference on Children of 1960

WHEREAS, the five decennial White House Conferences on Children and Youth have made great and lasting contributions to the advancement of knowledge of child health and welfare and its application in practice, and

WHEREAS, the President of the United States has announced that the Sixth White House Conference on Children and Youth is to be held in 1960, therefore be it

RESOLVED, that the American Public Health Association declares its support for the White House Conference on Children and Youth of 1960, and offers the expert resources of the Association in the preparatory work and in the Conference itself.

Day Care Services for Children

WHEREAS, day care services for children can provide valuable educational and social experiences, and contribute to healthy physical and emotional development of children, and

WHEREAS, such services are particularly beneficial to and needed by children of working mothers (the Census Bureau estimates that over two million mothers of children under six years are working; no more than 15 per cent of such children are able to receive the benefits of day care centers; approxi-

mately two and a half million children, six years to 11 years old, require after-school care), and

WHEREAS, experience shows that neither voluntary agency funds nor state appropriations are in themselves adequate to meet this need, and

WHEREAS, a bill was introduced in the 85th Congress, entitled, S. 4067, to authorize the secretary of health, education and welfare to make grants to the states to assist in the provision of facilities and services for the day care of children, therefore be it

RESOLVED, that the American Public Health Association endorse the principle of such legislation.

Federal Grants-in-Aid for Maternal and Child Health, and Crippled Children's Services, and Child Welfare

WHEREAS, the American Public Health Association has consistently favored the principle of federal grants-in-aid for health services of the states and territories, including the services supported under Title V of the Social Security Act, and

WHEREAS, there exists a need for increased appropriations for services for mothers and children, in view of the increase in child population, the increased costs of services, the need for more trained personnel, and the opportunity to apply in practice beneficial advances in surgery, medicine, and in the improvement of appliances for children, and

WHEREAS, the 85th Congress recognized the existence of this need when it passed H.R. 12834 entitled, "To Increase the Amounts Authorized to be Appropriated for Each Fiscal Year for the Programs of Maternal and Child Health Services, Services for Crippled Children and Child Welfare Services provided for by Title V of the Social Security Act," upon which a representative of the Association gave supporting testimony in Congressional Hearings, therefore be it

RESOLVED, that the American Public Health Association support increases of these appropriations to the authorized ceilings.

Grants for Maternal and Child Health Research

WHEREAS, legislation creating the Children's Bureau gave to it responsibility for investigating and reporting on matters pertaining to the welfare of children, and

WHEREAS, a section of the report entitled, "The Advancement of Research and Medical Education" by Stanhope Bayne-Jones and others, issued June 27, 1958, states that "The consultants believe research is a proper and necessary function of the Children's Bureau, and recommends that the research program of the Children's Bureau be strengthened by enactment of legislation authorizing the Bureau to support research through grants and contracts, and that the funds available for the total research of the Bureau be expanded," therefore be it

RESOLVED, that the American Public Health Association urge that legislation be enacted to authorize and appropriate funds to enable the Children's Bureau to expand its research activities, and to make contracts for research and make grants to state and local health and welfare agencies, institutions of higher learning and other agencies for support of research in maternal and child health and welfare.

Commendation for Public Health Service in a Disaster

WHEREAS, hurricane "Audrey" which struck Southwest Louisiana, Thursday, June 27, 1957, was the greatest storm disaster in Louisiana history, taking a toll of almost 500 lives, and

WHEREAS, the prevention of pestilence and the hygienic rehabilitation of the devastated areas of Cameron and Calcasieu Parishes were essential responsibilities of the Louisiana State Board of Health, and

WHEREAS, direction of all public health efforts in these disaster areas, on a scale of unprecedented magnitude for the state, was handled in an exemplary manner by the local health officer, Dr. Guillermo Vasquez and his staff, therefore be it

RESOLVED, that the American Public Health Association recognizes and commends Dr. Guillermo Vasquez, director of the Cameron and Calcasieu-Lake Charles, La., Parish Health Units, and his staff, for brilliantly upholding the tradition of public health service through selfless devotion to duty throughout the Hurricane Audrey disaster and the subsequent emergency period.

Health Planning Bodies

WHEREAS, the American Public Health Association has recognized the value of community planning inherent in the working together of state-wide and local health agencies, other groups and interested citizens, and

WHEREAS, the Committee on State and Local Health Councils of the National Health Council has recently reemphasized the significant role of local health officials in improved community health planning, and

WHEREAS, there is a gradually changing and enlarging concept as to the community's responsibility for the public's health, and

WHEREAS, there is a growing complexity in the governmental structure to provide health services, and

WHEREAS, community planning for voluntary and governmental health services promotes efficiency and economy as well as better services to the public, therefore be it

RESOLVED, that the American Public Health Association urge increased leadership and participation on the part of health officials in the establishment and strengthening of local and state-wide health planning bodies.

Financing Health Services for the Aged

WHEREAS, health services for the aged are inadequate throughout the nation, and

WHEREAS, good health care is becoming more expensive to provide for the aged because of their high illness and disability rates, the increasing complexity and rising costs of good care, the growing number of aged persons and their relatively small personal financial resources, and

WHEREAS, adequate financing is essential to support comprehensive health care of high quality for the aged, and

WHEREAS, the burdens of the costs of good care for the aged can be minimized for the aged, their families, contributors to voluntary insurance plans, charitable agencies and taxpayers through arrangements, effective throughout the working lifetime, which provide paid-up insurance for the older years, therefore be it

RESOLVED, that the American Public Health Association support appropriate proposals to provide paid-up insurance for health services required by aged persons, which insurance financing should be accompanied by provisions to protect and encourage high quality care, and be it further

RESOLVED, that the American Public Health Association support appropriate federal, state, and local efforts to improve the financing and adequacy of health services for needy and medically needy aged persons through the supplementary public assistance programs and through other means such as medical care programs administered by health departments, and for all aged persons through public health and related programs.

In Memoriam

WHEREAS, since the Eighty-Fifth Annual Meeting of the American Public Health Association there has been recorded the irreparable loss of 74 Fellows and members, all of whom have been cherished participants in this professional society, many having made outstanding contributions to the success of the Association, therefore be it

RESOLVED, that the Association expresses its deep regret at this loss, and be it further

RESOLVED, that the attached list of those deceased constitutes a part of this resolution.

Deceased Members and Fellows November, 1957, to October, 1958

Name	Member	Fellow
John F. Anderson, M.D., New Brunswick, N. J.	1903	1922 Charter
Edward Bartow, Ph.D., Iowa City, Iowa	1905	1922 Charter
Lewis O. Bernhagen, Beaumont, Tex.	1914	
Pierre-Paul Bouchard, M.D., D.P.H., Lamalbais, Quebec, Canada	1945	
Ellen L. Bradley, Atherton, Calif	1953	
Edward J. Braun, M.D., Cleveland, Ohio	1940	
William C. Chaplin, Puyallup, Wash.	1943	
Ettore Ciampolini, M.D., Ph.D., Littleton, N. H.	1920	
Thomas W. Clune, D.M.D., M.P.H., Cranston, R. I.	1941	1944
Lois B. Cox, Chapel Hill, N. C.	1948	
John W. Cronin, M.D., Chevy Chase, Md.	1947	1950
Jacob W. Cutler, M.D., Philadelphia, Pa.	1954	
Graham L. Davis, Symrna, N. C.	1943	1949
Neva R. Deardorff, Ph.D., New York, N. Y.	1949	
Robert Dessent, M.D., M.P.H., Chicago, Ill.	1942	1949
Thomas R. Donoghue, Pittsburgh, Pa.	1947	
Esther E. Doyle, R.N., Chicago, Ill.	1950	
Guy L. Elliott, Huntington, Long Island, N. Y.	1954	
Noel W. Ellis, Baltimore, Md.	1951	

Name	Member	Fellow
E. B. Erskine, M.D., Chicago, Ill.	1951	
Robert F. Evans, Ph.D., Iowa City, Iowa	1951	
Frank L. Flood, Boston, Mass.	1952	
Earl W. Flosdorf, Ph.D., Forest Grove, Pa.	1935	1942
Edward A. Fulton, M.S., St. Louis, Mo.	1950	
Edward K. Funkhouser, Washington, D. C.	1941	1957
Mrs. Dorothy Garnett, R.N., Sikeston, Mo.	1950	
Alfred B. Geyer, M.D., Palos Verdes Estates, Calif.	1953	
Lt. Colonel Lester J. Gorman, D.V.M., M.P.H., Lackland Air Force Base, Tex.	1952	
Tim Green, Oklahoma City, Okla.	1939	
L. L. Hedgepeth, New York, N. Y.	1931	1933
Seth G. Hess, C.E., New York, N. Y.	1937	1942
John L. Hydrick, M.D., Phoenix, Ariz.	1954	
Frederick W. Jackson, M.D., D.P.H., Winnipeg, Manitoba, Canada	1930	1946
Frank L. Kelly, M.D., Dr.P.H., Berkeley, Calif.	1916	1922 Charter
Mrs. Barbara Leavell, Cambridge, Mass.	1953	
Benzion Liber, M.D., Dr.P.H., New York, N. Y.	1916	1923 Charter
Ira H. Lockwood, M.D., Kansas City, Mo.	1948	
Earl G. Ludlam, D.D.S., M.P.H., Trenton, N. J.	1949	
Thomas McC. Mabon, M.D., Pittsburgh, Pa.	1924	1935
Samuel N. Mallison, M.D., Champaign, Ill.	1942	1949
Orville C. McCandless, M.D., Cheyenne, Wyo.	1943	
Jessie G. McCormick, Manhasset, N. Y.	1950	
Herman C. Menkel, M.D., McMinnville, Ore.	1951	
Allen A. C. Nickel, M.D., Bluffton, Ind.	1935	
M. Margaret O'Neal, M.D., M.P.H., Zanesville, Ohio	1951	1955
Henry S. Patterson, M.D., Suffern, N. Y.	1920	
David B. Peck, M.D., Chicago, Ill.	1927	
Stanley J. Peltier, Mt. Clemens, Mich.	1929	
William F. Flowfield, Philadelphia, Pa.	1957	
Blair Points, M.D., Oklahoma City, Okla.	1943	1946
Ellen C. Potter, M.D., Trenton, N. J.	1926	1941
Carl Puckett, M.D., Oklahoma City, Okla.	1924	
Geoffrey W. Rake, M.B., New York, N. Y.	1949	
George L. Ramsey, Philadelphia, Pa.	1926	
George C. Ruhland, M.D., Washington, D. C.	1914	1922 Charter
Ivan Saphra, M.D., Seaford, N. Y.	1950	1955
Severo P. Senen, M.D., M.P.H., Laoag, Ilocos Norte, Philippines	1957	
J. Harold Shaw, M.D., D.P.H., Charlottetown, Prince Edward Islands, Canada	1946	
Wilbur S. Stakes, M.D., Patchogue, N. Y.	1934	
James A. Stalbird, Albany, N. Y.	1954	
Dr. Andrija Stampar, Zagreb, Yugoslavia		Honorary Fellow
Mary M. Sullivan, Brookline, Mass.	1952	
Raymond O. Torr, New York, N. Y.	1950	
Charles C. Trembley, M.D., Ormand Beach, Fla.	1915	1922 Charter
Winston H. Tucker, Ph.D., M.D., Evanston, Ill.	1935	1939
J. L. Turnage, M.D., Crestview, Fla.	1950	
J. Harvey Venning, Greer, S. C.	1945	
M. Grace Watson, Seattle, Wash.	1944	
Carl E. Weigele, M.D., M.P.H., Trenton, N. J.	1941	
Karl H. Wilber, South Amboy, N. J.	1951	
Floyd P. Wilcox, D.V.M., Los Angeles, Calif.	1928	
Vernon M. Winkle, M.D., M.P.H., Topeka, Kans.	1943	1947
Jacob M. Wisan, D.D.S., M.S.P.H., Philadelphia, Pa.	1928	1935
W. J. Young, M.D., Auburn, Me.	1920	

In addition, the Council took the following action on resolutions that had been prepared but not adopted. It approved a recommendation that a proposed resolution on jurisdiction in air pollution control be referred to the Executive Board so that action could be initiated with sections and Association committees to achieve the desired action. A proposal for support of the establishment of diagnostic treatment centers was referred back to the Medical Care Section for further study and rewriting to make the intent clearer and more specific. A Program Area Committee submitted resolution on support of training for traffic rescue squads was referred back to the committee for further analysis, study, and rewriting if that seems desirable.

The Council agreed with the Committee on Resolutions in its recommendation for more detailed study of a proposed statement in support of planned parenthood programs. The matter was directed to the attention of the Executive Board for study and submission in revised form during the 1959 Annual Meeting.

Commendation of the International Journal of Health Education was considered inappropriate for an Association resolution. Likewise, commending the U. S. Public Health Service for reestablishment of its Division of Public Health Nursing did not seem appropriate for the Association.

Two resolutions adopted were modified from the form as presented initially. The "Support of Nursing Homes" resolution (see page 120) originally also called upon the Association to formulate policy principles relating to the subject of the resolution. The Council referred this to the Executive Board for action. Similarly, in considering the resolution dealing with the establishment of air quality standards the Governing Council called upon the sections and Association committees to undertake joint action within the Association and with other organizations in establishing standards for air.

This action was deemed more appropriate than having the resolution, as originally worded, direct the Association to do certain things.

National Foundation Health Scholarships

The National Foundation has announced the first step in its new expanded program—a multimillion dollar scholarship program to help students of medicine, nursing, physical and occupational therapy, and medical social work get their basic training. This means expanding the present program through which some 7,600 persons have been enabled to acquire special training for work in research and patient care.

The new program is designed to encourage the young person to enter one of the professions. At least 505 health scholarships will be offered each year. In the most populous states there may be as many as 25, in the least populous, five. The scholarships will thus provide four years of college education in career preparation for from one to five persons in each state for the five key professions.

Concurrently with the scholarship program, community interest in the health professions will be spurred through the Foundation's more than 3,000 local chapters. In fact, scholarship applications will be made through the local chapters. Exact procedures, developed in the National Foundation, will soon be described for the chapters.

NEWS OF AFFILIATED SOCIETIES AND BRANCHES

APHA Affiliated Societies and Branches

SOCIETY AND SECRETARY

ALABAMA PUBLIC HEALTH ASSOCIATION, Norma L. Chandler, State Health Dept., Montgomery
ARIZONA PUBLIC HEALTH ASSOCIATION, Mrs. Verona Massey, State Dept. of Health, Phoenix
ARKANSAS PUBLIC HEALTH ASSOCIATION, Mrs. Vada Russell, State Health Dept. Bldg., Little Rock
CALIFORNIA NORTHERN PUBLIC HEALTH ASSOCIATION, Mrs. Dalrie Lichtenstiger, 130 Haye St., San Francisco
CALIFORNIA, SOUTHERN, PUBLIC HEALTH ASSOCIATION, Byron O. Mork, M.D., University of California at Los Angeles, Los Angeles
COLORADO PUBLIC HEALTH ASSOCIATION, Alice de Bruyn Kops, 4660 S. Delaware, Englewood
CONNECTICUT PUBLIC HEALTH ASSOCIATION, E. Louise Ratcliff, M.P.H., 364 Whitney Ave., New Haven 11
CUBAN PUBLIC HEALTH SOCIETY, Dr. Raphael Calvo Fonseca, Calle 19 No. 311 Altos Vedado, Havana
FLORIDA PUBLIC HEALTH ASSOCIATION, Nathan J. Schneider, Ph.D., P. O. Box 210, Jacksonville
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TEXAS PUBLIC HEALTH ASSOCIATION, Joseph N. Murphy, Jr., State Dept. of Health, Austin
UTAH PUBLIC HEALTH ASSOCIATION, Mrs. Virginia Cole, City Health Dept., 115 S. State St., Salt Lake City
VIRGINIA PUBLIC HEALTH ASSOCIATION, William A. Dorsey, P. O. Box 2088, Richmond
WASHINGTON STATE PUBLIC HEALTH ASSOCIATION, Tom Drummey, State Dept. of Health, Smith Tower, Seattle
WEST VIRGINIA PUBLIC HEALTH ASSOCIATION, Paul B. Shanks, State Health Dept., Charleston
WISCONSIN ASSOCIATION FOR PUBLIC HEALTH, Paul Weis, 1 W. Wilson St., Madison
MIDDLE STATES BRANCH, APHA, Thelma Luther, Dept. of Health, Des Moines, Iowa
SOUTHERN BRANCH, A.P.H.A., Betty Ficquett, State Board of Health, Columbia, S. C.
WESTERN BRANCH, APHA, Robert E. Mytinger, 760 Market St., San Francisco 21, Calif.

Southern Branch—Arkansas Meeting

The Southern Branch and the Arkansas Public Health Association met jointly in Little Rock, May 7-9, 1958. Guy M. Tate, Jr., director of sanitation, Alabama Health Department, was Southern Branch program chairman. Three half days were devoted to general sessions, at the first of which Joseph M. Bistowish, M.D., gave the Southern Branch presidential address. Another was devoted to a discussion of the Structure of APHA and the Task Force, led by APHA President Roy J. Morton. Another was devoted to the reduction of health problems through urban renewal, and to dental public health and health nutrition.

Two half days were devoted to section meetings and one-half day to curbstone consultations. Under the leadership of Helen B. Fraser, M.D., director of maternal and child health, Kentucky State Department of Health, these covered a

broad spectrum of nine different topics, among them programs for the mentally retarded and for the aging, recruiting, evaluation of school health programs, radiation hazards, and poison control centers.

Officers elected are as follows:

Southern Branch:
- President—Guy V. Rice, M.D., director of health conservation services, Georgia Department of Health, Atlanta
- Vice-Presidents—Velma P. Brusse, New Orleans, La.; W. E. Ragsdale, Dallas, Tex.
- Secretary—Betty Ficquett, Columbia, S. C.

Arkansas:
- President—Catherine D. Hidy, public health educator, Little Rock Health Department
- President-Elect—Lynwood B. Jones, M.D., health officer, Lee, Monroe, and Phillips Counties District
- Secretary—Vada Russell, reelected

Southern Branch Nursing Section

For eight consecutive years, the Nursing Section of the Southern Branch, American Public Health Association, has been holding a field teaching conference just prior to the annual meeting of the Branch. The proceedings of the 1958 meeting held in Little Rock, May 5 and 6, are now available. All but two of the states in the Southern Branch were represented by the 69 persons who attended.

Plans were presented for the section's three-year study of "Essentials for Public Health Nursing Field Experience." This is described as "a study of essential abilities and the factors in the field center situation that are essential for their development."

A new ingredient, reportedly, was added to the 1958 conference in an address on "What Does the Public Want?" and a reaction panel on "How Are the Needs of the Public, the Consumer, and the Product Being Met?"

But the whole story is available in a 50-page well-bound mimeographed volume from Ruth V. Hay, Chairman, Field Teaching Conference, Box 229, Chapel Hill, N. C.; $1.

Joint South Dakota Meeting

About 250 persons met in Huron, September 10-12, representing the South Dakota Public Health Association, the state's Social Welfare Conference, and the state chapter of the National Rehabilitation Association. Medical care of the indigent, air pollution control, foster and day care regulations, and Indian health were among the discussion topics. Harry D. Bruner, M.D., head of the Medical Science Branch of the Atomic Energy Commission, spoke on the "Challenge of Nuclear Energy to the Health Sciences."

Resolutions urging air pollution studies and a study of residence and legal settlement laws were passed. The day care study committee was continued. The legislature was asked to vote favorably on a Legislative Research Council recommendation to move the state school for the blind to a more suitable location.

New officers are:

- President—G. Richard Ruddell, Spearfish
- President-Elect—Wesley J. Duiker, Pierre
- Vice-President—Melvin O. Nelson, Rapid City
- Secretary-Treasurer—Alice Brady, Pierre.

Chesley Lecture by Dr. Diehl

The 1958 Albert J. Chesley, M.D., lecture of the Minnesota Public Health Conference was given by Harold S. Diehl, M.D. Dr. Diehl, the former dean of the University of Minnesota's College of Medical Sciences is deputy executive vice-president of the American Cancer Society. "Out of the Past—and Into the Future," his address, was given at the annual banquet of the MPHC meeting. He reviewed the impact that Dr. Chesley's long service as state health officer had on both today's and tomorrow's health in Minnesota.

The September 18-19 conference opened with a session on coordination of public health services which was followed by a session on manpower con-

servation and recruitment. Rehabilitation and environmental health trends were other subjects on the program.

A new departure were three morning breakfast sessions on special problems. The public health and hospital disaster activities group was chaired by William C. Harrison, M.D., the state's director of local health administration. Communications and practical health education were explored under the leadership of Robert W. Schwanke, health education consultant in the State Health Department. Viktor O. Wilson, M.D., health officer of Rochester-Olmsted County called the signals at the session on how to organize and carry out a community public health project.

Robert D. Ragsdale, executive secretary of the Hennepin County Tuberculosis Association was reelected president, as was Stewart Thomson, M.D., treasurer. He is assistant director of the University of Minnesota School of Public Health. Newly elected vice-presidents are: Robert Anderson, D.V.M., associate professor in the Division of Bacteriology and Public Health, University of Minnesota School of Veterinary Medicine, and Mrs. Mildred Benson of St. Paul. A. B. Rosenfield, M.D., director of maternal and child health, State Health Department, will represent the Minnesota group on APHA's Governing Council.

White House Conference on Children

The sixth Decennial Conference on Children and Youth has been called for March 27-April 2, 1960, by President Eisenhower. The President will shortly announce a national committee to determine the theme and scope of the Golden Anniversary Conference, which will be made up of lay and professional citizens, government representatives at federal, state, and local levels, professional, public, and private organizations, all concerned with children. As of November 1, the governors of 41 states, Puerto Rico, Hawaii, the Virgin Islands, and American Samoa have appointed persons or organizations to lead the states' planning for the Decennial Conference.

"Conference Reporter" is a new publication designed to keep everyone, including many interested persons in other countries, informed as to what is happening in the Washington headquarters. The first issue in September reviews the state planning and the preliminary conferences leading up to the President's call.

Also available is a pamphlet, "Suggestions to Organizations Concerned with Conference Preparations." Both pamphlets may be obtained from Conference headquarters, 330 Independence Ave., S.W., Washington 25, D. C.

EMPLOYMENT SERVICE

The following pages present information for those seeking public health personnel and for those seeking positions in public health. Other information concerning vacancies and personnel available is on file in the Association office. Anyone wishing to have the benefit of this additional information can obtain it by writing to the Vocational Counseling and Placement Service of the Association.

Advertising space in these pages is available at special rates for the use of employers or individuals. The charges are $5 for the first 50 words or fraction thereof and $1 for each additional 10 words or fraction thereof. There is no charge to members or Fellows of the Association who desire to utilize the **Positions Wanted** portion of these pages. **Closing date** for receipt of advertisements is the first of the month preceding the desired month of publication. **All correspondence should be sent to the American Public Health Association, 1790 Broadway, New York 19, N. Y.**

POSITIONS AVAILABLE

Professor of Preventive Medicine—The University of Alberta invites applications for the position of professor and head of the Department of Preventive Medicine in the Faculty of Medicine. Duties will include administration of the department, teaching of graduate and undergraduate students, and a program of research. Salary will be $10,000 per annum with consulting privileges. Interested applicants should send a complete curriculum vitae, names of three referees, and a recent photograph to the office of the Dean of Medicine, University of Alberta, Edmonton, Alberta, Canada.

Health Director—Calhoun County, Mich. Well trained staff of 32; one of 39 counties in the nation approved for medical field training in public health. Nurse training also approved; excellent relationship with medical society, university school of public health, and Kellogg Foundation. M.P.H. and eligibility for Michigan medical licensure required. Salary open. Contact Mr. Frank Eifler, Acting Director, Calhoun County Health Department, Battle Creek, Mich.

Medical Health Officer—for a four-county area in the Upper Peninsula of Michigan having a population of 53,000. Starting salary $11,500. Paid vacation and sick leave. For further information write to the Copper Country District Health Department, 106 Shelden Ave., Houghton, Mich.

District Health Officers, Wisconsin—Two positions. Headquarters Rhinelander and Fond du Lac. M.P.H. degree and eligibility for license to practice medicine in Wisconsin required. Salary $10,464–$14,484, commensurate with experience. Write E. H. Jorris, M.D., Assistant State Health Officer, 400 State Office Bldg., Madison 2, Wis.

Director, Local Health Services, Wisconsin—Work with the state health officer and professional staff in improvement of local health services. M.P.H. degree and eligibility for license to practice medicine in Wisconsin required. Salary $10,464–$14,484, commensurate with experience. Write E. H. Jorris, M.D., Assistant State Health Officer, 400 State Office Bldg., Madison 2, Wis.

Public Health Nurses—Immediate openings in newly organized health department in Livingston County, Mich. Starting salary $4,500 per year with travel. Liberal personnel policies. Excellent opportunity for nurses interested in program development in rural-urban area enjoying the enthusiastic support of the schools and lay health organizations. Howell, the county seat, lies in the heart of Michigan near several large centers of population and the University of Michigan. Write Dr. A. B. Mitchell, Director, Shiawassee-Livingston District Health Department, Court House Annex, Howell, Mich.

Public Health Nurses—Must be eligible for license in New York State; public health nursing preparation required; city health department generalized program. Thirty-five-hour week, civil service, retirement plan plus Social Security, liberal hospitalization and vacation benefits, two weeks' annual sick leave cumulative to 120 days. Salary $4,360–$5,580 in four annual increments, plus $250 longevity increments at the end of 10, 15, and 20 years of service. Write Chester A. Hicks, M.D., Director of Public Health, New Rochelle, N. Y.

Public Health Nurses—Beginning salary $4,440. **Graduate Nurses**—Beginning salary $4,020. Five-day work week from 8:30 a.m. to 4:30 p.m. Four weeks' vacation, 11 holidays, 12 days' sick leave annually. Pension plan. Generalized public health nursing agency founded by Lillian D. Wald. Ongoing, inservice education program. Four universities offer opportunities for study at all levels. Some scholarship assistance available. For information write or call Personnel Office, Visiting Nurse Service of New York, 107 East 70th St., New York 21, N. Y. Telephone Lehigh 5-1100.

Public Health Nursing Consultant (Assistant to Director of Public Health Nursing in State Health Department)—Give consultation to public health personnel in all phases of public health nursing, including in-service education; prepare manuals, guides, etc., for public health nurses; assist in administration of program. Bachelor's degree in public health nursing minimum preparation; master's degree desirable; four years' experience in public health nursing, including two in administration or supervision. Salary: start at $6,264, maximum $6,876. Civil service, vacation, sick leave, Social Security, and retirement benefits. Write E. H. Jorris, M.D., Assistant State Health Officer, State Office Bldg., Madison 2, Wis.

Wanted: **Nutritionist**—State-wide program. Liberal vacation and sick leave. Bachelor's degree in home economics or nutrition, supplemented by some graduate level courses in nutrition. Salary $4,056–$5,096. Employment within the range, based on experience. Write for application and information to Arthur S. Taylor, Personnel Officer, Health and Welfare Department, State of Maine, Augusta, Me.

Public Health Nutritionist—Develop and conduct program in district area, including consultation to nurses, teachers, social workers, small hospitals, nursing homes, children's institutions; training programs; community studies and general nutrition education. Master's degree, internship, minimum of two years' hospital and community nutrition experience; $5,784–$6,924, plus travel expense. Vacation, sick leave, Social Security, retirement. Dr. Amy L. Hunter, State Board of Health, Madison, Wis.

Sanitarian III—$4,836–$5,880. Prescott, Yavapai County and Douglas, Cochise County. Work with other Sanitarians III in own district. Three years' experience required. Arizona Merit System, 11 N. 17th Ave., Phoenix, Ariz.

Sanitarian or Engineer—to plan, organize, and head a department and program for Michigan county of 130,000 population. Progressive community on Lake Michigan. Salary open. Requirements: B.S. in engineering, sanitary science, public health, or allied, plus M.P.H. or equivalent, plus ten years' experience. Apply Floyd Marrs, Chairman, Berrien County Health Service, Courthouse, St. Joseph, Mich.

Public Health Engineer—for progressive county health department in rapidly growing, attractive suburban area of Kansas City, Mo., 12 miles downtown by superhighway. Degree in civil or sanitary engineering and supervisory experience required. Mileage, annual and sick leave and other privileges. Salary commensurate with qualifications. Apply to Director, Clay County Health Department, Liberty, Mo.

Wanted: **Medical Bacteriologist**—B.S. degree, plus experience. Starting salary $6,000 per annum. Write Dr. Robert T. Rogers, St. Lawrence County Laboratory, Canton, N. Y.

Health Educator—Desirable qualifications: formal training and experience in public health; sound working knowledge of community organization. Salary open, depending on qualifications. Generous mileage and expense allowances, vacation, sick leave, retirement policies. Write Rosalyn Mervis, Director of Health Education, Tuberculosis League of Pittsburgh, 2851 Bedford Ave., Pittsburgh 19, Pa.

Opportunities for **Health Educators,** Florida—Travel allowance, vacation, sick leave, state retirement, Social Security, hospitalization (optional). **Health Educator I**—($3,600–$4,560), B.S. in education, social work, or nursing. A central county health department (in citrus area, urban-rural). **Health Educator II**—($4,140–$5,280), B.S. with an M.P.H. in public health or health education, or an equivalency of five years in teaching science. An east coast county health department (fastest growing). Apply to Miss Elizabeth Reed, Director, Division of Health Information, Florida State Board of Health, P. O. Box 210, Jacksonville, Fla.

Public Health Educator III—Initiate and develop school-community health education programs in a multicounty district. Desirable qualifications: M.P.H. degree, plus two years' experience in health education; sound working knowledge of principles of education and methods of teaching. Salary $482–$577 per month. Travel allowance, vacation, sick leave, retirement, group insurance plans. Write Dr. Amy L. Hunter, Director, Bureau of Maternal and Child Health, Wisconsin State Board of Health, Madison 2, Wis.

Florida, Brevard County Health Department (Cocoa, Melbourne, and Titusville, Fla.). **Psychiatrist**—to organize and direct outpatient clinic under auspices of County Health Department. Preferably board certified, but will accept one who is eligible; experience with children, adolescents, and adults; generalized service, including discharged state hospital patients, alcoholics, court referrals. No other psychiatrist in county; mushrooming population (100,000 in county) in this missile community (Cape Canaveral). Full-time **Health Officer IV**—$11,040–$13,800; part-time up to $9,900; must be licensed if not full time; up to two years for licensure if employed full time. Contact Dr. J. D. Workman, Brevard County Health Department, 1010 S. Dixie Highway, Cocoa, Fla., or Dr. Wayne Yeager, Director, Bureau of Mental Health, Florida State Board of Health, Box 210, Jacksonville, Fla.

Public Health Officer II—Salary $883–$966. Vacancy on the island of Hawaii. Requires three years' public health physician experience, one of which must have been in the administration of a generalized public health service, a doctor of medicine degree, and a master in public health. Write for further information and application to the Department of Civil Service, Territory of Hawaii, 825 Mililani St., Honolulu 13, Hawaii.

Public Health Nurse—Immediate opening in a generalized public health nursing program which includes student affiliation. Eligibility for Wisconsin state registration and public health certification required. Salary $379–$425. Car allowance, five-day week, retirement plan, Social Security, liberal hospitalization, sick leave, and vacation benefits. Apply Director of Personnel, City Hall, Kenosha, Wis.

POSITIONS WANTED

On Box Numbers, Address APHA at 1790 Broadway, New York 19, N. Y.

Public Health Administrator—M.D., Dr. P.H.; male. Twenty years' experience in cancer and other chronic diseases, including an outstanding state-wide cancer registry. Retiring from state service. Excellent health. **Box PH-87,** Employment Service, APHA.

Executive Director—M.A., F.A.P.H.A. Desire placement in the west or southwest for family reasons. Twenty years' experience as director of nonprofit educational organization in metropolitan area. Experience includes community organization, preparation of educational materials for use in schools, by professional people, and the consumer, and production of booklets and educational movies in use by most state health departments. **Box C-42,** Employment Service, APHA.

Commercial Advertisements

All communications on the following commercial advertisements should be sent to Burneice Larson, Medical Bureau, Suite 605, 900 North Michigan Avenue, Chicago 11, Ill.

OPPORTUNITIES AVAILABLE

(a) Health commissioner, county health department; full-time cooperating unit; near university center, Midwest; $13,000. (b) Young board internist to become clinical director, health service, also act as assistant director; 20,000 students; expansion program; Midwest; $15,000. (c) Student health physician; health center serves two university campuses; new 32-bed hospital diagnostic center; opportunity research and teaching; $12,000 with month's vacation; Midwest. (d) Public health bacteriologist; qualified perform tests of milk, water, sputum examinations, cultures, etc., public health laboratory; $5,500; Midwest. (e) Industrial hygienist; duties involve survey, toxic materials, designate methods to handle in safe manner, research toxic new materials including lead, mercury, solvents; work closely state department health, company chemical, metallurgical laboratories, establishing safe working procedures; graduate chemist, minimum five years' experience; industrial toxicology required; $8,000–$10,000; East. (f) Consultant public health nurse industrial hygiene division of health department; East; $6,200–$7,800. (g) Assistant director of nurses; charge outpatient, x-ray, admitting departments; 1,500-bed hospital, university medical center, Midwest; to $7,200. (h) Staff nurse for special research project in tuberculosis; university medical center; some fieldwork; 35-hour week; $4,200 up; Midwest.

OPPORTUNITIES WANTED

Opportunities for candidates in the fields of medicine, science, nursing, teaching, administration. Candidates in all parts of the country. Negotiations strictly confidential.

BOOKS AND REPORTS

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.

DIETARY PREVENTION AND TREATMENT OF HEART DISEASE—By John W. Gofman; Alex V. Nichols; and E. Virginia Dobbin. New York, N. Y.: Putnam's (210 Madison Ave.), 1958. 256 pp. Price, $3.95.

In this book, which the authors state was written for the intelligent lay individual and the physican, there is presented the point of view that there is sufficient information upon which to base a rational dietary program for the prevention of coronary heart disease. This is highly controversial. The argument hinges on whether or not a reduction in the amount of certain classes of lipoproteins in the blood stops, and possibly reverses, the arteriosclerotic narrowing process in the coronary arteries. The authors, with considerable justification, believe this to be true. However, many qualified research workers hold that the evidence is insufficient at this time to support more than a statement that blood levels of certain fatty substances can be raised or lowered by dietary manipulation under controlled experimental conditions.

The authors describe in a very understandable and readable manner their principles of dietary modification. They prefer that dietary changes be indicated by an analysis of the individual's own serum lipoprotein pattern.

The remaining three fourths of this text is devoted to practical application. This includes a method of dietary self-evaluation, comparison with "The Recommended Diet," how to make the appropriate alterations, ways in which liquid vegetable oils may be used, and practical methods and recipes for carbohydrate reduction.

The clear exposition of the principles of dietary modification are valuable for anyone who must decide whether or not a diet should be changed. The kind of methods described and the type of detailed information provided are useful guides for dietary modifications.

JOHN H. BROWE

RECOMMENDED METHODS FOR THE MICROBIOLOGICAL EXAMINATION OF FOODS—Subcommittee on Methods for the Microbiological Examination of Foods. New York, N. Y.: American Public Health Association (1790 Broadway), 1958. 207 pp. Price, $4.50.

This is a new and welcome addition to the family of manuals on methodology for the public health laboratory which are sponsored and published by the Association. It fills a long-felt need for a comprehensive manual of dependable methods for the microbiological examination of foods and will doubtless be valuable both to the expert and the novice in the field.

The usefulness of this bench manual is not limited to public health aspects—it covers the gamut of process and sanitary control of foodstuffs from producer to consumer. Essentially all kinds of foods (fresh, canned, pickled, dried, or frozen) and major food ingredients even to spices, soft drinks, and juices are included. Recommended bacteriological and mycological methods selected for their proved helpfulness by experts in the field are described in adequate detail and in a few cases auxiliary chemical determinations are suggested as aids in interpretation of results. The content of each chapter is well outlined for readability and rapid reference by boldface section and subheads. Each chapter stands as an entity on its subject and, in general, outlines the specific problem, then proceeds through sampling, transportation, and storage precautions,

preparation and examination of sample to interpretation of results, with references for the reader who wishes to delve further.

Though its scope is broad, the volume itself is handily small, and its usefulness is further enhanced by selection of procedures which are practicable. The technics, equipment, and materials are generally available in any good microbiological laboratory. A working book to add to the laboratory's library.

K. E. Cox

MUNICIPAL AND RURAL SANITATION—By Victor M. Ehlers and Ernest W. Steel (5th ed). New York: McGraw-Hill (330 West 42nd St.), 1958. 596 pp. Price, $9.00.

This book through a number of editions has for over thirty years been a good friend to those engaged in environmental sanitation and has lent a helpful hand to the many who want a speaking acquaintance with this rapidly expanding field. It combines in one volume a wealth of practical information about environmental sanitation, together with some information about communicable diseases, vital statistics, and public health organization.

In the new fifth edition the authors have put forth great effort to bring up to date, expand, and add new material. Particularly important are a new chapter on radiological sanitation and a helpful glossary of radiological health terms. The previous chapter on school sanitation has been wisely broadened to cover institutional sanitation.

While a considerable number of chapters covering related subject matter have been successfully consolidated, there is still the vexing problem of organizing the subject matter common in this complex field. As a result, such items as cross-connections, radioactive wastes, ventilation, etc., are discussed in a number of places throughout the book.

Important and useful new material has been added on many subjects, among them bottled water and ice sanitation, poultry processing, industrial wastes, illumination, toxicological data, insecticides and rodenticides, individual sewage disposal, industrial wastes, federal housing legislation and many others.

Unfortunately the section on individual water supplies still concerns itself with the traditional type of installation, and the newer problems of suburban-type installations using modern pumping equipment are not covered. While smoke abatement has now been separated from the industrial hygiene chapter, it might well have been broadened to cover more facets to the now pressing problem of air pollution control. Perhaps this will be done in a later edition.

To keep up with the advancement of environmental sanitation technics and to reflect these completely and accurately within the confines of one volume has now become a Herculean task. The authors have very carefully reviewed their material and have generally done a fine job of bringing their valuable text up to date. Walter A. Lyon

INDUSTRIAL NOISE MANUAL—Published by the American Industrial Hygiene Association. Detroit, Mich.: (14125 Prevost), 1958. Price, $7.50.

This manual should be required reading for every industrial hygienist. It is of particular value for those who are generalists and have to deal with industrial noise from time to time. It will also help the health officer or safety supervisor to understand and evaluate the hazards of industrial and community noise. The book is somewhat technical and the reader will have to have a good science background in order to be able to derive maximum benefit.

The chapter on instruments for sound measurements and audiometry will be of particular value for those who are faced

with the decision as to which instruments to purchase. It lists the various instruments and gives the prices which by now may be somewhat outdated but will give the reader an idea of the comparative values.

The chapter entitled "Physics of Sound" is a little too short to give a satisfactory and understandable explanation of the complicated and extensive subject. The other chapters will guide the industrial hygienist through the field of sound measurement technic, sound survey, calibration, effects of noise, engineering control to medical aspects of hearing conservation to personal protection in noise control.

Any person with scientific training who is concerned with the noise problem and is not yet an expert in the field will find this book of great value.

JAN LIEBEN

HEALTH AND HYGIENE—By A. Leslie Banks and J. A. Hislop. London, England: University Tutorial Press Ltd. (Clifton House, Euston Road), 1957. 322 pp. Price, 15/-.

This British text originates from the Department of Human Ecology of the University of Cambridge. In the preface the authors claim that while "in the past the emphasis was on the physical environment, today it is recognized that the biological and social environments are of equal importance" and accordingly state that "in contrast to the older text books of a purely technical character this text, with due regard to the change in outlook, will concentrate on those materials which appertain to the promotion of health and welfare." After this introduction, the reader thumbing through the volume experiences some disappointment, since well over half of the 21 chapters are devoted to environmental sanitation and communicable disease control, and only relatively few pages are given to what an American reader would consider the social and personal aspects of public health and which he enjoyed reading about in Professor Banks' previous book on "The Social Aspects of Disease."

The 21 chapters, however, are well organized, starting with two very interesting historical chapters on "Diseases in the Ancient World" and "Europe from the Black Death to the 20th Century." There are ample technical illustrations and photographs on such matters as "A Properly Constructed Cesspool," "Two Common Arrangements of Bricks in Building Walls," "To Illustrate the Principle of Ventilation by Convection Currents," for example.

The complete lack of literature references is not necessarily a disadvantage inasmuch as the book is not more than a primer, very carefully written, to be recommended to beginners, technicians, and laymen. The reviewer finally became reconciled to the discrepancy between her expectation of an emphasis on social factors and the actual material by believing that the authors have taken the point of view that environmental variables, such as housing, working conditions, and atmospheric pollution, for example, are related to social structure and social variables; they have given their attention to the end products rather than to the factors which bring about the conditions of our social environment.

GERTRUD WEISS

BIOLOGICAL TREATMENT OF SEWAGE AND INDUSTRIAL WASTES—Vol. II—Anaerobic Digestion and Solids-Liquid Separation—Edited by Brother Joseph McCabe and N. W. Eckenfelder, Jr. New York, N. Y. Reinhold (430 Park Avenue), 1958. 330 pp. Price, $11.50.

This is the second volume in a series on biological waste treatment and covers anaerobic digestion and solids-liquid separation in three separate sections: anaerobic treatment, sedimentation and flotation, vacuum filtration, and sludge conditioning. The book is a compilation

of the proceedings of the Second Conference on Biological Waste Treatment held at Manhattan College and includes 28 papers by leading authorities in the field.

These papers are largely reports covering research work performed by the authors on a specific phase of treatment either in the laboratory or in the field. Basic principles and fundamentals are also discussed in a few of the introductory papers. Contributions have been made by commercial representatives, research people, universities, colleges, consulting engineers, official agencies, and others.

In each instance an excellent presentation has been made but the reader should realize that papers such as these usually appear in journals and other periodicals where they are accepted as the most recent work on a subject which may not necessarily have stood the test of time. It is therefore somewhat surprising to find research data and material intermingled with fundamentals and bound in textbook form.

It is, nevertheless, an excellent reference book covering the latest on material, equipment and progress in research on specific aspects of the three major areas mentioned above. The authors are to be commended for making these outstanding presentations available in such attractive form.

JEROME H. SVORE

MANUAL FOR NUTRITION SURVEYS—Interdepartmental Committee on Nutrition for National Defense, Washington, D. C.: Gov. Ptg. Office, 1957. 160 pp. Price, $1.50.

This manual is designed as a guide for survey teams in collecting data for an appraisal of the nutritional status of a population. The present version evolved from field tests in Iran, Pakistan, the Philippines, and Korea. While it is intended mainly for use with military forces, it can also be adapted very successfully for surveying civilian populations. The sections on biochemical methods and clinical appraisal of nutriture are particularly valuable. A brief discussion of the pertinent aspects of economics, agriculture, and food technology, which must be taken into account in making practical recommendations for improvement of nutritional status, is given. The procedures for dietary studies require considerable modification for civilian groups, but they serve, nevertheless, as useful suggestions. A guide for the interpretation of clinical, biochemical and dietary findings is included, as is a list of laboratory equipment and supplies sufficient for running about 3,000 blood and urine samples. Anyone interested in the conduct of nutrition surveys should have a copy of this excellent, concise manual.

SAM C. SMITH

THE ENDEMIAL COLIC OF DEVONSHIRE—AN ESSAY CONCERNING ITS CAUSE—By George Baker. Published in 1767. Reprinted in Facsimile by the Delta Omega Society, 1958. 74 pp. Price, $5.00 (Copies available from the Book Service, American Public Health Association, 1790 Broadway, New York 19, N. Y.).

This is the fourth in a series of public health classics reprinted under the sponsorship of the Delta Omega Society. "Typhoid Fever" by William Budd appeared in 1931, "Snow on Cholera" in 1936, and "Panum on Measles" in 1940. Now we have Baker on the Devonshire colic as a worthy and appropriate addition to the series. This paper, read in 1767 before the Royal College of Physicians, illustrates again how a combination of keen observation and logical reasoning can lead to the solution of a health problem. Noting that colic and the palsy associated with it were very frequent in Devon but rare in Hereford, Baker also found that the farmers of Devon used lead-lined presses to make cider. He extracted lead from the cider

pressed in Devon, but found none in the Hereford product. Ergo, the Devonshire colic was a form of lead poisoning. Despite some fierce and bitter opposition, farmers removed the lead from their presses and the Devonshire colic became extinct.

While our problems may be more complex, the lesson of Baker's essay is still valid. The basis of epidemiology is still the work in the field or at the bedside, but the collection of masses of data is no substitute for intelligent thought in any analysis of the unknown. One could wish for no better introduction to epidemiology, in this sense, than Baker's essay.

The volume is dedicated to William H. Welch and has a useful introduction by Dr. Huntington Williams. The facsimile reproduction is clear and the book is well made. This volume should be widely used in schools of public health and medicine. And one can hope that the Delta Omega Society will continue to issue such volumes at more frequent intervals. GEORGE ROSEN

80 PUERTO RICAN FAMILIES IN NEW YORK CITY—By Beatrice B. Berle. New York, N. Y.: Columbia University Press (2960 Broadway), 1958. 331 pp. Price, $4.75.

"Armed" (the term is the author's) with some knowledge of anthropology and a strong psychiatric orientation, the author of this book and her co-workers offered limited medical care services to a self-selected group of Puerto Rican families. From these, a small group was chosen to report upon. Related with warmth and humanity, their medical and social histories restate some valuable insights about the ways and problems of Puerto Rican migrants.

Apparently, the stories are intended, with other data and observations, to support a hypothesis on the relationship between stress and disease. However, the hypothesis seems to be accepted throughout as fact rather than assumption. Data in general are poorly presented. Tables are not well organized and are inadequately captioned.

Nevertheless, several possibly productive questions are raised about relationships between: migration and premigration problems, accident rates and length of stay in the new environment, skin color and stress in different environments, the trauma of the period immediately after migration and the rest of the migrant's life in his new home. Since the report is well intentioned, easy to read and has an accumulation of facts and truisms about Puerto Rican migrants, it may be used as one of the introductions to this community and its health problems. As a study, however, it hardly seems to justify its hard covers.

JONAS N. MULLER

MEAT HYGIENE—By A. R. Miller (2nd ed.). Philadelphia, Pa.: Lea and Febiger (600 Washington Square), 1958. 557 pp. Price, $8.50.

The second edition of this volume, while primarily designed as a classroom text for students, is a complete, useful authority and reference work for all engaged in meat and poultry inspection procedures. The chapter devoted to history includes the events that led the enactment of the Federal Meat Inspection Law.

The "meatiest" chapter, also the smallest, is devoted to "elements of meat hygiene." The author has in this edition given suitable recognition to the fact that poultry meat is in fact meat. With the advent of the new poultry products inspection act considerable data with respect to the inspection of poultry carcasses have been included. Ante-mortem and post-mortem examination procedures are presented in an understandable manner and will aid the student and the uninitiated into the methods of meat inspection.

Public health workers will not be satisfied with the lack of emphasis which the author places on health hazards to consumers and workers which are eliminated where adequate meat inspection procedures are practiced.

In the field of trichinosis the author cites a number of court cases dating from 1918 through 1944 which places responsibility for "cooking pork thoroughly" on the purchaser. He failed to cite a more recent case, Meyer vs. Greenwood, 124 N.E. 2870 (1955), which case places a greater degree of responsibility on the seller of pork, more in line with that of other food packers in so far as safety for edibility at the time of sale.

The three new chapters on "Food Poisoning," "Chemical Additives," and "Ionizing Radiation" are very helpful, well written, concise, and contain the elements of these subjects. They are recommended reading for those who want small doses of good things to know in the field of food and meat hygiene.

OSCAR SUSSMAN

ANTISEPTICS, DISINFECTANTS, FUNGICIDES AND STERILIZATION—Edited by G. F. Reddish (2nd ed.). Philadelphia, Pa.: Lea and Febiger (600 Washington Square), 1957. 963 pp. Price, $15.00.

This book is a compendium by 28 authorities in each area presenting basic principles and applications in all fields of disinfection and sterilization. The book has been fully revised with new material in each area and new chapters. Chapters on sanitizing and bacteriostatic agent by Stuart, sterility testing by Brewer, and ultraviolet irradiation by Shechmeister have been added. The book is a complete authoritative treatise on disinfection and sterilization that should be on the shelf of all public health workers interested in environmental health.

W. L. MALLMANN

PHYSICAL EDUCATION FOR ELEMENTARY SCHOOLS—By Ruth Evans; Thelma I. Bacon; Mary E. Bacon; and Josie L. Stapleton. New York, N. Y.: McGraw-Hill (330 West 42nd St.), 1958. 317 pp. Price, $5.50.

The diversified professional training and successful experience of four authors are combined in this guide book on programs for elementary physical education. Reflected in this publication devoted to planning, developing, and extending the program of physical education in the elementary schools are the philosophical viewpoints and suggestions for practical applications of a former supervisor of physical education for women, a classroom teacher, an elementary school principal, and a university director of physical education for women.

The classroom teacher will find in this publication detailed examples of physical education programs for children ranging from five to 12 years of age. Introducing the four chapters devoted to each age group is a discussion of the growth development and needs of these children followed by examples of group games, team games, rhythms and dances, stunts, and self-testing activities to meet the characteristics of each specific group.

The teacher education institution will see this publication as a possible textbook for students preparing for responsibilities in elementary physical education. The emphasis on this curricular offering as an integral part of the total educational program and the suggestions for lesson and unit planning provide a sound basis for the inexperienced teacher upon which to build her program. Questions and topics for discussion, suggested student problems and activities, and references for additional reading are included at the end of each chapter and section.

For the specialist in physical education a section is devoted to a consideration of some perennial problems confronting the classroom teacher which the

supervisor or consultant must be prepared to answer.

Of practical value to all three groups who might turn to this publication for guidance is a chapter on enrichment of the learning process through the utilization of a variety of approaches, technics, and materials.

Although stress is placed on the acquisition of knowledge and the development of neuro-muscular skills throughout the publication, reference to the formulation of desirable attitudes toward physical education is somewhat lacking. The reader will also need to resort to her resourcefulness in devising ways and means by which the child will be provided with planned opportunities within each activity for the development of social outcomes and skills in human relations.

The publication should be a helpful reference in the professional library of all those who are responsible for the understanding, planning, and execution of programs in physical education as integral parts of the total educational experience of the elementary school-age child. ELENA M. SLIEPCEVICH

DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS—By N. Irving Sax, et al. New York, N. Y.: Reinhold (430 Park Ave.), 1957. 1467 pp. Price, $22.50.

A large encyclopedia-type publication weighing seven pounds, which must be handled gently for the binding breaks easily, this book is divided into 12 sections. The first nine deal with toxicology, atmospheric pollution, ventilation control, reactor safeguards, radiation hazards, fire protection, personnel protection and personal hygiene, storage and handling of hazardous materials, and allergic diseases on a short, necessarily incomplete and at times elementary basis. Section 10, "General Chemicals," covers over 1,000 pages and constitutes the bulk of the book. Here 8,500 chemicals are listed alphabetically, their physical, chemical, toxic, and flammability properties briefly outlined. Section 11, "Shipping Regulations," covers its subject in most comprehensive fashion. Section 12, "Index to Synonyms," is a useful presentation in chemical dictionary style.

The avowed objective of the book is to give a detailed picture of hazards which accompany the use of materials in industry, with sufficient background to solve on-the-spot safety problems that daily arise in industry. A worthy ambition, but no one publication can be all-authoritative over so vast a field.

Section 4, "Atmospheric Pollution," and Section 9, "Allergic Diseases in Industry," are not fully consistent with the book's title and appear somewhat out of place in this publication. Although both sections cover pertinent problems confronting industrial health and safety personnel, the chief emphasis departs from the theme of the publication as a whole.

The continued emphasis on fire hazards and the handling and shipping of hazardous materials is a real asset to this book. It should be invaluable to plant safety personnel as a ready source of information on toxicity, fire hazards, and the handling and shipping of materials. Industrial health personnel will find it similarly useful. Health departments and poison control centers also should find it a most useful source of information in handling daily problems arising in their fields.

SEWARD E. MILLER

HOMEMAKER SERVICE—Papers by Philip M. Margolis, et al. Reprinted from Social Casework. New York, N. Y.: Family Service Association of America (215 Fourth Ave.), 1957. 40 pp. Price, $.85.

This book clearly defines the many facets involved in a homemaker service and is strengthened by a description of

how needs for this type of service are determined in a community.

Types of family problems in which homemakers may be utilized are illustrated by actual case studies that present a variety of situations. The homemaker's role on the team with the physician and the social caseworker is emphasized as a factor in maintaining optimum emotional and physical health of the family.

The limits of the service are clearly defined and methods used for selection of families eligible for the service are described.

A theme which runs through all the papers and is emphasized as a very important part of the planning phase is the inclusion of the homemaker in the planning and the willingness of all family members to accept her. It therefore follows that the selection of just the right person to act in this capacity is a major function of the agency operating the service.

While a homemaker by no means fills the gap left by an ill mother, it is a very good temporary measure designed to keep families together and to provide the necessary housekeeping services in the period of need.

This booklet would be an excellent aid to those agencies or communities which are planning or already have established a homemaker service.

JOSEPH H. KINNAMAN

THE PSYCHIATRIC HOSPITAL AS A SMALL SOCIETY—By William Caudill. Cambridge, Mass.: Harvard University Press, 1958. 406 pp. Price, $6.50.

This is a useful book for those interested in the structure and functioning of a small psychiatric hospital, and also for those interested in the title of Caudill's final chapter, "The Possibility of a Clinical Anthropology." That chapter and also the third in the volume, specifically on the problems of an Italian male patient, as these problems are exacerbated in the "treatment process," are strong pleas by an anthropologist for more anthropology in evaluating patients' reactions and treatment processes. As a study of the small psychiatric hospital, the earlier and already famous volume, "The Mental Hospital," by Stanton and Schwartz (1954), provided more theoretical direction and practical arrival at understanding symptoms in groups of patients. But Caudill's concept of poor therapeutic handling and hospital insensitivity to cultural background leading to more tenuous integration is consistent with our own findings and with those of Stanton and Schwartz.

While there are several dubious points, such as the rough and ready use of a clinically weak "optimism versus pessimism" variable, the author has developed good frameworks for study of his two chief topics. He used participant observation in a study of individual patients; he studied the doctor-patient relationship in the setting of communication processes and administrative practices; he charted a collective disturbance involving the whole organization in the manner of Stanton and Schwartz; he ingeniously collected perceptions and attitudes on hospital functioning by the use of a modified TAT-type series of drawings of hospital scenes and wisely included hospital functionaries as well as patients in this analysis. Finally, as anthropologist, he effectively analyzed daily administrative conferences for inquiry into real connections between personality, social role, and hospital structure as a social system.

We have implied that there is not enough anthropology and clinical evaluation of whole patients, of entire illness states, of administrative personalities, or of residents and staff, though here and there one gets a glimpse of the larger pictures. Caudill is dealing far too much with secondary symptoms rather than with illness structures, with parts of

people (on a kind of stimulus-response behavioristic plane), rather than with total reactions; and often with one type of test (like modified TAT hospital scenes); rather than with batteries of instruments. As Redlich states in the forward ". . . we feel that we have not reached the end of the road." This reviewer recalls that when stress rose in a Japanese-American Relocation Center at Tule Lake, where he was stationed for three years as community analyst, the rates of mental breakdown rose also and the floridity of symptoms increased. Caudill shows ways in which we can measure such community stresses by study of communities as wholes. He shows, and we agree emphatically, that psychiatric institutions need the anthropologist.

MARVIN K. OPLER

REHABILITATION—A COMMUNITY CHALLENGE—By W. Scott Allan. New York, N. Y.: Wiley (440 Fourth Ave.), 1958. 247 pp. Price, $5.75.

In this volume the author has succeeded in concisely delineating the province of modern rehabilitation. The book is a clearly written and quite readable work and includes a very representative bibliography of current rehabilitation literature. The major emphasis is on the community, public health, and economic aspects of rehabilitation and in this area it will prove a valuable source of information, particularly for the worker who is not primarily engaged in the field. It will also be a welcome addition to the library of the rehabilitation professional.

The first half of the book is devoted to a historical survey of the field and a description of the various disciplines and technics which collectively constitute modern rehabilitation. The author is to be complimented on the clear style, content, and fairness of this presentation. He has, by and large, minimized purely technical matters and problems in these chapters and devoted himself rather to broad principles.

The emphasis on the need for continuing medical direction and responsibility in the entire rehabilitation procedure is, in the opinion of the reviewer, a valuable concept and should aid significantly in the proper orientation of newly developed rehabilitation programs.

The latter half of the book is devoted to the relationship of rehabilitation and the community in its social, vocational, and economic life. In these chapters the author's great experience and broad knowledge is clearly evident.

Chapters on "Social Laws and Rehabilitation," "Economic Values of Rehabilitation," and "Community Organization," to name only a few, are in themselves excellent sources of information and expert advice.

The community services planner, public health worker, and the enlightened businessman will find much to disturb as well as to stimulate him in this volume. The physician will, hopefully, broaden his horizons as to the responsibility of his profession in the over-all battle against chronic disease and disability.

The book is recommended enthusiastically to that wide readership whose professional or community responsibility is in any way involved with the problems of disability and those suffering from it.

DANIEL FELDMAN

INDUSTRIAL HYGIENE AND TOXICOLOGY. VOLUME I—GENERAL PRINCIPLES—Edited by Frank Patty (2nd ed.). New York, N. Y.: Interscience Publishers (250 Fifth Ave.), 1958. 807 pp. Price, $17.50.

For ten years the first edition of this treatise has been a standard reference for industrial hygienists, toxicologists, plant physicians, and safety engineers. It has been of use to research chemists, design engineers, architects, governmental health and safety agencies, and industrial management.

It was originally published in two volumes. The new edition will be comprised of three volumes. "Toxicology" will be Volume II. "Industrial Environmental Analysis" will be Volume III.

In many instances the special needs of the reader may be met without purchasing the complete set.

The first volume of this new edition is up to date, well documented, and carefully edited. Indexing has been improved. Illustrations are more numerous.

Valuable new additions are a short section on the statistical analysis of data and chapters on human engineering, industrial sanitation, air conditioning, air pollution, noise, lighting and heat control in hot industries. This new and revised material will be of considerable interest to the professional in the field of occupational health and safety.

The book is thoroughly recommended to any individual who is looking for a standard reference, comprehensive and readable, relating to most of the general areas of industrial hygiene.

C. M. BERRY

PROBLEMS IN INTERCULTURAL HEALTH PROGRAMS—By George M. Foster. New York, N. Y.: Social Science Research Council (230 Park Ave.), 1958. 49 pp. Price, $.50.

This 49-page pamphlet is an outline of the human and social problems encountered in intercultural health programs which involve "(a) the formal, planned interchange of medical and associated ideas and practices across cultural and subcultural boundaries, and (b) sets of interpersonal relationships of many types between individuals and groups of individuals belonging to different cultures and subcultures." Within this general framework, Foster discusses the cultural and social problems, as well as the categories of knowledge needed to solve them. The major section of his work deals with how such knowledge may be utilized in the operation of a public health program.

Perhaps the most important part of this presentation is the discussion of cultural barriers, motivations to change, and the role of the social scientist. Mere listing of the headings of this section does not do it justice. As cultural barriers, Foster mentions suspicion of new things, fatalism, modesty, the religious factor, social structure, family structure, suspicion of government programs and personnel, problems of communication, problems of perception, faulty technics, and differing expectations. On the other hand, motivations to change include prestige, perception of economic advantage, competition, the desire to please, the desire to do what is forbidden, play, and authority.

Under the heading of role of the social scientist, the author discusses special qualifications, kinds of work, and ways of working.

This outline has long been needed and the reviewer is struck by the applicability of this conceptual framework not only to foreign health programs but to the everyday operation of local stateside health departments.

JAMES G. RONEY, JR.

THE VOCABULARY OF DENTISTRY AND ORAL SCIENCE—By George B. Denton. Chicago, Ill.: American Dental Association, 1958. 207 pp. Price, $4.00.

One of the roadblocks that waste considerable time in current conferences and workshops of scientific people is the lack of understanding and acceptance of nomenclature. For at least 80 years the American Dental Association struggled with this problem until Dr. Denton, a former teacher of dental history and literature at Northwestern University's dental school, accepted the task of developing a book on dental terminology that would contribute vigorously to improvement and standardization of the profession's nomenclature. After three workshops devoted to (1) concepts of

occlusion, (2) supplementing the dental dictionary, and (3) troublesome terms, a book has been written most painstakingly and has recently been published.

Beginning with a discussion of the logic of language, the book is divided into four parts: Part I deals with such material as concepts of language, characteristics of, and forces influencing scientific language, principles of choice or coinage of terms, resources for the dental vocabulary, and an appraisal of dictionaries and other aids to language. Part II is devoted to the nomenclature of dentistry in general and to the various branches of dentistry—operative, prosthodontic, orthodontic, surgical (oral), periodontic, pedodontic, public health, endodontic, and the minor divisions. Part III discusses such problems as writing a useful definition, choosing the preferable term, and when and how to coin an acceptable term. The last 48 pages, which constitute Part IV of the book, are a bit difficult to classify. They present critically appraised historical or biographical notes on selected terms which are particularly helpful when new terms are to be developed or older terms justified.

For the dentist who writes or teaches this book is recommended as a working tool in his library, and the chapters on concepts and coinage of terms are suggested as reading for any scientific person interested in the jargon of his specialty. KENNETH A. EASLICK

MODERN PRESCRIPTION DRUGS: THEIR IMPACT ON THE FAMILY BUDGET— Issued by the Citizens' Committee for Children of New York City, Inc. (112 East 19th St.), 1958. 58 pp. Price, $1.00.

In this report the Citizens' Committee for Children of New York City has brought together a number of materials relating to the problem of high-cost medications. The value of the report results from the intrinsic importance of the problem, the spirited interest of the committee, and the scarcity of sources in this field, rather than from either superior organization or exhaustive factual content. Medicines and appliances in 1956 accounted for almost two and a half billion dollars, or over 20 per cent of private expenditures for medical care. Expenditures on medicines outside hospitals are rarely covered under existing health insurance.

The problems created by the newer drug therapies touch on family economics, standards of good medical practice, policies of public health and welfare agencies, and unregulated activities of pharmaceutical producers.

There is no doubt that the antibiotics, steroids, tranquilizers, and other new drugs enjoy their popularity because of their enormous value, when properly used, in lessening the duration, the severity, and the care costs of many illnesses. However, both the consumer and the physician are believed to be under excessive pressure from advertising to include these products in the treatment program. Competition in the drug industry seems to focus on creating product loyalty in an atmosphere of administered prices. The low-income family is placed under a strain to meet the cost of these drugs. The result-making sacrifices in other budget items, turning to self-medication, or accepting the status of medical indigency.

The report points out the need to define the nature and extent of public responsibility for the provision of life-saving and specific drugs when patients cannot afford them. Illinois has found it possible to make special purchase arrangements to circumvent the high retail prices of drugs needed for rheumatic fever prophylaxis. Contemporary concern with chronic disease programs, in which maintenance doses are used, guarantees the continued importance of expenditure on prescription drugs and therefore the need to work out financing

and optimum utilization. This book is of interest to the various disciplines and services concerned with medical indigency. CHARLOTTE F. MULLER

THE STUDENT-PHYSICIAN: INTRODUCTORY STUDIES IN THE SOCIOLOGY OF MEDICAL EDUCATION—Edited by Robert K. Merton; George Reader; and Patricia Kendall. Cambridge, Mass. For the Commonwealth Fund by Harvard University Press, 1957. 360 pp. Price, $5.00.

This volume consists of two introductory essays and eight research reports on the studies of medical education that are being carried on by the Bureau of Applied Social Research of Columbia University. The contributors discuss the historical and institutional context of medical education, how Cornell Medical School became involved in this research, how and when students decide to study medicine, the influences that enter into these decisions, tendencies toward specialization in medical training, the development of a professional self-image, how physicians learn to deal with the uncertainty inherent in their work, and a number of other topics. Clearly these are preliminary accounts of research, but they are nonetheless fascinating. It is evident that what underlies the specific reports is the process of socialization by which the student acquires the culture of his future profession. At the same time one misses a discussion of the social structure of the medical school, and the framework within which this process goes on. Presumably, this will be reported on later.

The whole problem of the socialization of the professional person is a matter of high interest and pertinence for public health workers and those who train them. A major concern in teaching students in schools of public health is to take account of the various subcultures in which they have already become socialized and studies of the kind conducted by Merton and his co-workers can help us to understand the intricacies of the problem.

GEORGE ROSEN

BOOKS RECEIVED

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.

ADVANCEMENT OF MEDICAL RESEARCH AND EDUCATION, THE. FINAL REPORT OF THE SECRETARY'S CONSULTANTS ON MEDICAL RESEARCH AND EDUCATION. U. S. Department of Health, Education, and Welfare. Washington, D. C.: Gov. Ptg. Office, 1958. 82 pp. Price, $.60.

ANNOTATED BIBLIOGRAPHY OF VITAMIN E. VOL. IV. 1955-1957. New York, N. Y.: National Vitamin Foundation, 1958. 216 pp. Price, $3.00.

BIBLIOGRAPHY OF INTERNAL MEDICINE, A. COMMUNICABLE DISEASES. Arthur L. Bloomfield. Chicago, Ill.: University of Chicago Press, 1958. 560 pp. Price, $10.00.

BIRTH OF NORMAL BABIES, THE. Lyon P. Strean. New York: Twayne Publishers, 1958. 194 pp. Price, $3.95.

BREAST CANCER—THE SECOND BIENNIAL LOUISIANA CANCER CONFERENCE. Albert Segaloff. St. Louis, Mo.: Mosby, 1958. 257 pp. Price, $5.00.

COMMUNITY ORGANIZATION 1958. Papers Presented at the 85th Annual Forum of the National Conference on Social Welfare. New York, N. Y.: Columbia University Press, 1958. 139 pp. Price, $2.50.

THE DOCTOR BUSINESS. Richard Carter. Garden City, N. Y.: Doubleday, 1958. 283 pp. Price, $4.00.

EDUCATION OF THE INDIVIDUAL, THE. Alfred Adler. New York: Philosophical Library, 1958. 143 pp. Price, $3.50.

ELEMENTARY SCHOOL CHILD AND HIS POSTURE PATTERNS, THE. Evelyn A. Davies. New York, N. Y.: Appleton-Century-Crofts, 1958. 80 pp. Price, $.95.

ESSENTIALS OF THERAPEUTIC NUTRITION. Solomon Garb. New York, N. Y.: Springer, 1958. 147 pp. Price, $2.00.

FEMALE OFFENDER, THE. Caesar Lombroso and William Ferrero. New York, N. Y.: Philosophical Library, 1958. 313 pp. Price, $4.75.

FOOD AND YOU. Edmund Sigurd Nasset. New York, N. Y.: Barnes and Noble, 1958. 166 pp. Price, $1.25.

FOOD MICROBIOLOGY. William Carroll Frazier. New York, N. Y.: McGraw-Hill, 1958. 472 pp. Price, $9.00.

FUN FOR THE NOT-SO-YOUNG. Sid G. Hedges. New York, N. Y.: Philosophical Library, 1958. 142 pp. Price, $3.75.

FUTURE GROWTH OF WORLD POPULATION, THE. United Nations, Department of Economics and Social Affairs. New York, N. Y.: Columbia University Press, 1958. 75 pp. Price, $.80.

GUIDE TO THE HISTORY OF BACTERIOLOGY, A. Thomas H. Grainger, Jr. New York, N. Y.: Ronald Press, 1958. 210 pp. Price, $4.50.

HANDBOOK OF CARDIOLOGY FOR NURSES (3rd ed.). Walter Modell and Doris R. Schwartz. New York, N. Y.: Springer, 1958. 328 pp. Price, $4.50.

HEALTH OF A NATION, THE.—HARVEY W. WILEY AND THE FIGHT FOR PURE FOOD. Oscar E. Anderson, Jr. Chicago, Ill.: University of Chicago Press, 1958. 338 pp. Price, $6.00.

HOUSE OF OPEN DOORS—THE CHRONICLE OF A 50-YEAR CRUSADE AGAINST TUBERCULOSIS IN WISCONSIN. Harold Holand. Milwaukee, Wis.: Wisconsin Anti-Tuberculosis Association, 1958. 257 pp. Price, $3.00.

HOW TO HOLD A BETTER MEETING. Frank Snell. New York, N. Y.: Harper, 1958. 148 pp. Price, $2.95.

HUMAN ANIMAL, THE. Weston La Barre. Chicago, Ill.: University of Chicago Press, 1955. 372 pp. Price, $6.00.

HUMAN POTENTIALITIES. Gardner Murphy. New York, N. Y.: Basic Books, 1958. 340 pp. Price, $6.00.

MEN, MOLDS, AND HISTORY. Felix Marti-Ibanez. New York, N. Y.: MD Publications, 1958. 114 pp. Price, $3.00.

NUTRITION IN HEALTH AND DISEASE (13th ed.). Lenna F. Cooper, et al. Philadelphia, Pa.: J. B. Lippincott, 1958. 734 pp. Price, $6.00.

PATIENTS, PHYSICIANS AND ILLNESS. E. Gartley Jaco, editor. Glencoe, Ill.: Free Press, 1958. 600 pp. Price, $7.50.

PHILOSOPHY OF ATOMIC PHYSICS. Joseph Mudry. New York, N. Y.: Philosophical Library, 1958. 136 pp. Price, $3.75.

PHOTORECEPTION. Jerome J. Wolken, et al. New York, N. Y.: New York Academy of Sciences. Vol. 74, Art. 2, 1958. pp. 161–406. Price, $3.50.

POLIOMYELITIS. Papers and Discussions Presented at the Fourth International Poliomyelitis Conference. Compiled and edited for the International Poliomyelitis Congress. Philadelphia, Pa.: Lippincott, 1958. 684 pp. Price, $7.50.

POPULATION GROWTH AND ECONOMIC DEVELOPMENT IN LOW-INCOME COUNTRIES. Ansley J. Coale and Edgar M. Hoover. Princeton, N. J.: Princeton University Press, 1958. 389 pp. Price, $8.50.

PSORIASIS. Peter Flesch, et al. New York, N. Y.: New York Academy of Sciences, Vol. 73, Art. 5. pp. 911–1037. 1958.

PSYCHIATRY IN THE BRITISH ARMY IN THE SECOND WORLD WAR. Robert H. Ahrenfeldt. New York, N. Y.: Columbia University Press, 1958. 312 pp. Price, $6.00.

PSYCHOANALYTIC STUDY OF THE CHILD. VOL. 13. Edited by Ruth S. Eissler, et al. New York, N. Y.: International Universities Press, 1958. 573 pp. Price, $8.50.

RECENT ADVANCES IN CEREBRAL PALSY. Edited by R. S. Illingworth. Boston, Mass.: Little, Brown, 1958. 388 pp. Price, $12.00.

SCIENCE AND EDUCATION AT THE CROSSROADS—A VIEW FROM THE LABORATORY. Joseph William Still. Washington, D. C.: Public Affairs Press, 1958. 138 pp. Price, $3.75.

SCOTTISH SOCIAL WELFARE 1864-1914. Thomas Ferguson, Baltimore, Md.: Williams and Wilkins, 1958. 610 pp. Price, $8.50.

SEWERAGE AND SEWAGE TREATMENT (8th ed.). Harold E. Babbitt and E. Robert Baumann. New York, N. Y.: Wiley, 1958. 790 pp. Price, $10.75.

SOCIAL AND PSYCHOLOGICAL FACTORS AFFECTING FERTILITY, VOL. 5. P. K. Whelpton and Clyde V. Kiser, Editors. New York, N. Y.: Milbank Memorial Fund, 1958. pp. 1087–1372. Price, $1.00.

SOLVING THE SCIENTIST SHORTAGE. David C. Greenwood. Washington, D. C.: Public Affairs Press, 1958. 68 pp. Price, $2.00.

TRENDS IN GENETIC ANALYSIS. G. Pontecorvo. New York, N. Y.: Columbia University Press, 1958. 145 pp. Price, $4.00.

TUBERCULOSIS: PREVENTION AND CONTROL. H. W. Hetherington and Fannie W. Eshleman. New York, N. Y.: Putnam's, 1958. 404 pp. Price, $6.50.

UNDERSTANDING MEDICAL TERMINOLOGY. Sister Agnes Clare, St. Louis, Mo.: Catholic Hospital Association, 1958. 202 pp. Price, $3.50 paper; $5.00 cloth.

VITAL STATISTICS OF THE UNITED STATES 1956. Vol. I—Introduction and Text Tables. Tables for Alaska, Hawaii, Puerto Rico, and Virgin Islands. Marriage, Divorce, Natality, Fetal Mortality and Infant Mortality Data. Washington, D. C.: Gov. Ptg. Office, 1958. 378 pp.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

Raymond S. Patterson, Ph.D., F.A.P.H.A.

Hospitals and the People—Admission rates to nongovernmental hospitals nearly doubled in two decades (1937-1957). Added beds and reductions in stay made the phenomenon possible. Maternity cases currently account for a sixth of all admissions. The paper in which these and many more significant statistics appear concludes with the comment that our hospitals have done much to raise levels of medical care and will probably play an even more impressive role in the years to come.

ANON. Rise in Hospital Admissions. Statist. Bull. Metrop. Life Insur. Co. 39, 10: 1 (Oct.), 1958.

Second Thoughts—This entertaining discussion begins: "You may take fluoride to the people, but you still cannot make them drink it." There follow many highly quotable comments. The entire philosophic discussion is heartily commended to any Association member who has been emotionally bruised by the violence of the public rejection of his scientifically sound and socially well intended efforts. In fact our Association might well reprint the paper to be offered as balm to all who have been or will be so bruised. It may help them to be more tactfully persuasive in their next attack.

ANON. Water Fluoridation. Lancet 7049: 741 (Oct. 4), 1958.

For the Record—Courts of ten states have held that fluoridation of public water supplies does not infringe on legal rights and is a proper exercise of charter powers of local communities. The United States Supreme Court has refused to review four of these decisions. Only one count has ever rendered an adverse decision and that one was promptly reversed. Such unanimity of judicial opinion is rare, the author comments.

CONWAY, B. J. Legal Aspects of Municipal Fluoridation. J. Am. Water Works A. 50, 10: 330 (Oct.), 1958.

Are You an Introvert?—Test subjects were placed in auto driver-training devices after imbibing various amounts of alcohol or a placebo. Illuminated extroverts, it says here, drove at unchecked speeds into trouble, made few corrective movements but committed many errors. Similarly entertained introverts try to compensate and are anxious to demonstrate efficiency, overreacting and making many corrective

movements. Their mean error scores were significantly less than those of the extroverts.

DREW, G. C., et al. Effect of Small Doses of Alcohol on a Skill Resembling Driving. Brit. M. J. 5103:993 (Oct. 25), 1958.

Nurse on the Jury—There is scarcely a nickles worth of public health in this story, but the account of one nurse's experience on jury duty is entertainingly written and worth a lot beside to all—for who of us isn't exposed to the possibility of such a civic demand? Those who are caught in the net will find precious little "inside dope" to prepare one for this unique experience.

GRIFFIN, W. H. Court, Court! Am. J. Nursing. 58, 11:1547 (Nov.), 1958.

"Central Figure in Maternity Services"—One striking difference in national approaches to public health here and in England is dramatized in this discussion of the training and oversight of midwives of whom it is said "we shall need more, not less, in the future." In England only 64 per cent of deliveries are made in hospitals, whereas here all but a handful take place there.

IRVINE, E. D. The Place of the Midwife in the Maternity Services. M. Officer 100:17 263 (Oct. 24), 1958.

It Worked There—In Japan, contraceptive methods were offered by physicians to all families in a demonstration conducted in three typical villages. After seven years, three-quarters of the families exposed to pregnancy were employing one or another method. (Of those families with four or more children 95 per cent were.) The birth rate (26.7 at the start) fell by half. If the entire nation could have been so benefitted there might have been 3,700,000 fewer unwanted births—it is estimated.

KOYA, Y., et al. Seven Years of a Family Planning Program in Three Typical Japanese Villages. Millbank Mem. Fund Quart. 36, 3: 363 (Oct.), 1958.

The People Understand—This is an account of Aberdeen's (Scotland) sustained health educational project. Five health visitors were given reduced districts so they could devote about a third of their time to group work. The details of their programs are too numerous to be covered here, but the final conclusion seems worth quoting in full: "We think that our audiences have learned a little and that the Health Department has gained new status in their eyes; and since teaching is a two-way traffic, we have learned too."

LAMONT, D. J., and MACQUEEN, J. A. One Approach to Health Education. M. Officer 100, 18:279 (Oct. 31), 1958.

Chambers of Commerce, Please Note—Athletic programs for school children should contribute to total fitness, physical and emotional. They should be: (1) diversified and free of physical hazards; (2) confined to the community and safe from exploitation; and (3) be backed by mature and informed adults. The ideal program involves all boys and girls and should be graded. The four sound and stimulating papers of this symposium are commended to all—not just child health specialists.

MAKSIM, G. Desirable Athletics for Children. J.A.M.A. 168, 11: 1431 (Nov. 15), 1958.

Measuring Ideas About Health—During the last three decades 15 or more scales have been concocted for estimating health ideas, attitudes, or behavior, but few have been successfully standardized. We still need clearer understanding of ways that attitudes develop and ways they may be measured. Health educators are called upon to lend their talents and time to solve the continuing uncertainties by the author.

MAYSHARK, C. Critical Analysis of Attitude Measurement in Health Education 1927-1957. Res. Quart. 29, 3: 309 (Oct.), 1958.

From Largest Transportation System—Sickness and absence records of about 20,000 bus drivers over an 11-year period provide a revealing base for observations about adult health. In all that time there were only 28 cases of sudden loss of consciousness while driving, of which only three caused accidents.

NORMAN, L. G. The Health of Bus Drivers. Lancet 7051: 807 (Oct. 18), 1958.

World Health—Everyone of us can profit if, occasionally, he will raise his eyes above the small preoccupations of his daily job. So this reminder-of-ideas-you-may-have-missed urgently begs you to look up—if you did miss it—this brief but profound review of the accomplishments of WHO with its challenging call to arms for the things remaining to be done.

PARRAN, T. The First 12 Years of WHO. Pub. Health Rep. 73, 10: 879 (Oct.), 1958.

From England, Too—Following a five-year cancer educational campaign in a group of towns, 1,200 women were questioned. A similar number of women from a control group of towns were also interrogated. There was found a significantly greater proportion of women in the test towns who thought that cancer is not inevitably incurable and that early treatment does improve the chance of cure.

PATERSON, R., and AITKEN-SWAN, J. Public Opinion on Cancer. Lancet 7050: 790 (Oct. 11), 1958.

"Hallmark of Civilization"—A former state health officer urges more productive cooperation between practicing physicians and public health physicians especially in the fields of old age and chronic illness, areas that, happily, are now under special study by the AMA.

UNDERWOOD, B. Physician Relationships. J.A.M.A. 168, 8: 1000 (Oct. 25), 1958.

If additional information is desired regarding the articles listed in this bibliography, please communicate directly with the publications in which they appeared; the addresses are furnished for your convenience.

Am. J. Nursing (American Journal of Nursing), 2 Park Ave., New York 16, N. Y.
Brit. M. J. (British Medical Journal), British Medical Association House, 19 Tavistock Sq., London, W.C. 1, England.
J.A.M.A. (Journal of the American Medical Association), 535 N. Dearborn St., Chicago, Ill.
J. Am. Water Works A. (Journal of the American Water Works Association), 2 Park Ave., New York 16, N. Y.
Lancet, 7 Adams St., Adelphi, London, W.C. 2, England.
Milbank Mem. Fund Quart. (Milbank Memorial Fund Quarterly), 40 Wall St., New York, N. Y.
M. Officer (Medical Officer), Chronicle House, 72-78 Fleet St., London, E.C. 4, England.
Pub. Health Rep. (Public Health Reports), Gov. Ptg. Office, Washington, D. C.
Res. Quart. (Research Quarterly), American Association for Health, Physical Education, and Recreation, Washington, D. C.
Statist. Bull. Metrop. Life Insur. Co. (Statistical Bulletin Metropolitan Life Insurance Company), One Madison Ave., New York 10, N. Y.

CREDIT LINES

The Journal cannot furnish copies of items mentioned in Credit Lines. Please send requests to the addresses given.

Nursing Moves Ahead in the West

Activity in nursing education by the Western Council on Higher Education for Nursing is indicated in three recent publications. The first is "Five Programs for Western Nursing Education." Here are described briefly the continuing education, regional research conference, nursing doctoral fellowship, and regional nursing survey programs.

"Progress Report," as of March, 1958, outlines what has been done in developing some of these five programs with the support of the Kellogg Foundation. Experimental doctoral programs are being explored in the Universities of California and Colorado. There are seminar groups for developing master's degree and bachelor's degree programs. A three-year continuation education program, financed by a separate Kellogg Foundation grant, is under way. The fact-finding nursing survey to help discover what expansion in nursing resources in the years ahead is dictated by needs was begun in 1958.

Finally, "Nursing Education: Today, Tomorrow, The Day After That" is the proceedings of the First Annual Conference of the Nursing Council in March, 1958. There are the reports of four panels on Nursing Education Today, As We Look at Nursing Education (by a dentist, physician, nutritionist, and educator), What We Need Tomorrow from Nursing Education (by public health director and hospital and veteran administrators), and Where Are We Going in Nursing Education?

Although there is no information as to distribution, it is to be supposed that these pamphlets are in "the public domain," at least for those with a legitimate interest. Jo Eleanor Elliot is nurse consultant of the Western Council on Higher Education for Nursing, Norlin Library, Boulder, Colo.

A Unique Medical Society Growth

The Pennsylvania State Medical Society has recently published a pamphlet on its Educational and Scientific Trust. The subtitle is "Creation—Purpose—Potentialities." The definition is "an instrumentality designed to promote through medical education and scientific research the protection and conservation of human resources."

The initial project of the trust begun in 1955 is "a professional education program to promote community health." With a grant of $115,000 from the A. W. Mellon Educational and Charitable Trust, it developed an educational program "to help the practicing physician to understand more fully and to evaluate the importance of preventive and protective health measures in his community and their close relationship to the health of his individual patients." In this program it has recommended participation of physicians in county health surveys as a means of self-education. It has published "The County Health Department," outlining the legal basis, the need, and relationship of such a department to the county medical society. "A New Tool for Physicians" describes the services possible to physicians from a well organized county health department. Further, every member of the state society receives the Trust's quarterly newsletter, "The Physician and Public Health." As a result, wherever there are local health studies or movements to organize official com-

munity health services in communities the county medical societies are active, very often as leaders in the program.

The other three projects still ahead are recruitment of physicians for public health, financial aid for medical students, and effective hospital utilization study.

Pascal F. Lucchesi, M.D., chairman of the state society's Committee on Preventive Medicine and Public Health, is on the Trust's Board of Directors. Its secretary and project director is N. Leroy Elwell, 230 State St., Harrisburg.

Design of Refuse Incinerators

"Engineering Design of Refuse Incinerators" is a manual of specifications for the engineering design and the review of plans for refuse incinerators designed for recreational officials in state parks and institutions and engineers in state health departments. Prepared by the National Park Service, the manual is divided into two parts: a discussion of factors influencing the design of an incinerator, including refuse quantity data, chamber specifications, and calculations for the engineering design of a unit. General Engineering Program, Public Health Service, Washington 25, D. C.

Preventing Restaurant Insanitation

"The Business of Public Eating Places" illustrates prevention rather than cure of an evil. It is addressed to those who want to go into the business of serving food to the public and those already in the business who have problems or plan expansion or improvement of their facilities. There are sections on planning and operation, with details about such items as utilities and architectural features. Operation includes food storage and preparation, service, dishwashing, pest control, and personnel. A bibliography and the Connecticut Sanitary Code Regulations complete the 36-page pamphlet. Connecticut State Department of Health, Hartford 15. No information as to out of state distribution.

"Neighbors" in a Research Project

What is described as a means of getting guinea pigs for a research project, but which also has health education as an important by-product, is described for Credit Lines by W. W. Peter, M.D., retired. The background, as he relates it, is that the National Heart Institute and the Baltimore City Hospitals are cooperating, through a Gerontology Branch and laboratories in the latter, in a long-range research project on aging. The basic biology of aging and the performance capacities of all adults are to be studied with the goal not simply of prolonging life but of making it "more effective and meaningful."

In addition to the patients at city hospitals, volunteers are recruited from normal self-sustaining noninstitutional populations. The volunteer agrees to spend a day at the hospital for thorough clinical entrance examination (with findings reported to the private physician) and, upon acceptance, to be hospitalized while the individual's aging process is studied. Tests are planned annually.

In Dr. Peter's retirement community, Port Republic, Md., he recruited volunteers. With a letter to an initial list of 42 neighbors of whom 18 accepted, the chain reaction netted a total of 63 volunteers during 1958. Service to humanity rather than personal reward is the "pitch" used.

Septic-Tank Practice

"Manual of Septic-Tank Practice," Public Health Service publication No. 526, is presented for the guidance of health agencies, building officials, installers, and others involved in the installation and operation of septic tanks. The Joint Committee on Rural Sanitation

joined with the Public Health Service in preparing the manual. Professor John E. Kiker, Jr., College of Engineering, University of Florida, is the American Public Health Association's representative on the Joint Committee.

The manual is based upon the latest available information on the design and operation of septic tanks. The report is divided into two parts. The first deals with systems for private residences, the second, installations for institutions, recreational areas, and other establishments. Percolation tests are discussed in each part. Characteristics of satisfactory tanks, leaching areas, and proper operation are also discussed. The report is liberally illustrated. Gov. Ptg. Office, Washington 25; 35 cents.

Health Education Materials Catalogue

The South Dakota State Health Department has prepared a 1958-1959 "Health Education Materials Catalogue." This might be useful to other state health educators preparing a similar directory of films, film strips, slides, and printed materials available to local health departments. More than 500 separate films, film strips, and pamphlets are listed under 19 separate subject classifications. These materials are available on loan or "for keeps" within the state. The catalogue, however, might be shared outside the state. Division of Health, Education, South Dakota State Department of Health, Pierre.

Medicine, Health, World Friendship

In September, 1956, at a White House Conference, President Eisenhower asked leaders of the professions, business, and arts "to develop methods of people-to-people contacts round the world through related professional and cultural interests." As a result the People-to-People Committee for Medicine has been organized. This committee is made up of representative members of the various medical and health professions under the leadership of Louis H. Bauer, M.D., president of the World Medical Association. Chairman of the subcommittee on Public Health is Henry A. Holle, M.D., Texas state health officer. Each of its four other members is a Fellow of the American Public Health Association.

The committee is asking the individual members of the professions to develop international friendship and understanding through correspondence, travel, international meetings, and lectures in other countries, and particularly by contributing books, journals, films, and equipment to rebuild devastated libraries and to build resources in underdeveloped countries. It asks individuals to report what they will do. Committee headquarters are at 10 Columbus Circle, New York 19, N. Y.

Worth Acquiring

"Students Today—Community Leaders Tomorrow" tells some stories of how staffs of local community chests and welfare councils have been educating boys and girls in social responsibility. Through student field trips, youth community service programs, use of student volunteer aides in service programs, and imaginative cooperation with schools, students are trained in good citizenship and future community leadership.

This handbook might serve usefully in stimulating ideas for similar activity by other groups. It was prepared on the basis of a study by the United Community Funds and Councils of America from which it is available. 345 E. 46th St., New York 17, N. Y.; $1.00.

"State Occupational Health Programs" is a new Public Health Service publication. Programs in 45 states, nearly always in either the health or labor departments, are described. The report indicates that initiation or improvement of

in-plant employee health programs is planned in nearly all of the state health departments. Public Health Service Publication No. 605. Gov. Ptg. Office, Washington 25, D. C.; 30 cents.

"Day After Tomorrow" is a preretirement health counseling booklet, further described as "a manual for those looking ahead to retirement." Prepared by the Bureau of Chronic Diseases and Geriatrics of the New York State Department of Health, the pamphlet is described as "an attempt to summarize some of the basic components of a health protection program for those who are looking ahead to retirement."

Health examinations and health habits, nutrition, activity, recreation, housing, finances, community health resources are each dealt with, the goal being "adding life to years." Goethe's nine requisites for contented living are quoted.

Health enough to make work a pleasure.
Wealth enough to support your needs.
Strength to battle with difficulties and overcome them.
Grace enough to confess your sins and forsake them.
Patience enough to toil until some good is accomplished.
Charity enough to see some good in your neighbor.
Love enough to move you to be useful and helpful to others.
Faith enough to make real the things of God.
Hope enough to remove all anxious fears concerning the future.

New York State Department of Health, 84 Holland Avenue, Albany—no information as to out of state distribution.

As a further resource for New York's "senior citizens" is "Salute to the Aging." This one is prepared by the special assistant to the governor on problems of the aging, Interdepartmental Committee on Problems of the Aging. This is both a narrative description and a directory of services in the state available to older citizens. "Free copies may be obtained as long as the supply lasts." Office of the Special Assistant, Problems of the Aging, State Capitol, Albany. This office also has a 1955-1958 summary of "New York State Activities in the Field of Aging," in the 11 departments making up the Interdepartmental Committee.

"CO and You: Carbon Monoxide Poisoning" is a brief Public Health Service pamphlet telling what CO poisoning is, how it happens, and how to prevent it. The little leaflet should be useful for any safety campaign kit. Public Health Service Publication No. 611 of the Health Information Series No. 91. Gov. Ptg. Office, Washington 25, D. C.; $5 per 100.

NEWS FROM THE FIELD

WHO News

Regional Office for Africa

That the present generation might be the last to suffer leprosy is the hope expressed in the latest annual report of Dr. F. J. C. Cambournac, director of the African Regional Office of WHO. Of an estimated 2,300,000 cases in the region, 1,000,000 are under treatment. Other diseases that are candidates for eradication are yaws and malaria. More than one-third of 20,000,000 yaws sufferers have been cured; as in the rest of the world a vast malaria eradication program is under way.

Also reported by Dr. Cambournac at the Regional Committee in Liberia in September was the emphasis in member countries in strengthening basic health services and in controlling the nutritional and communicable diseases. Training courses and seminars in malaria, nutrition, and brucellosis have been organized with the help of the Food and Agriculture Organization and the Commission for Technical Cooperation in Africa. During the year ending June, 1958, the regional office awarded 128 training fellowships.

More Studies of Heart Disease

Further studies on hypertension and coronary heart disease are needed. This is the conclusion of a meeting of the WHO Expert Committee on Cardiovascular Diseases and Hypertension in Geneva in October. Factors in the development of coronary heart disease that were thought to need study are nutrition, exercise, smoking, psychosocial factors, and hormones. The incidence of the disease among various groups such as smokers and nonsmokers, sedentary and physically active workers, persons with differing diets and in different countries should also be studied.

Criteria for the diagnosis of hypertension and coronary disease were established. The committee made recommendations about further specific studies It also outlined tasks that WHO might undertake to encourage and coordinate international work on cardiovascular diseases. The committee's report will be submitted to the WHO Executive Board in January with recommendation for approval and publication.

Dental Public Health Training

WHO and the W. K. Kellogg Foundation are underwriting a program of dental public health training to meet Latin American needs for specialists in this field. The Brazilian University of Sao Paulo, early in 1958, started a training program with the collaboration of Brazil's federal health agency and ICA. Dental officers of the two agencies assist in the academic phase of the course and supervise the field training program. In December, 1958, the university's School of Hygiene and Public Health graduated the first class of 16 public health dentists. They represent eight Latin American countries and eight students were WHO fellows.

Updating Registration Procedures

A first county in New York State has decided to take advantage of a 1955 law permitting establishment of county registration districts in those counties with an organized county health department. Heretofore, Tompkins County, which is thus pioneering, had 15 primary registration districts for its population of 60,000. Now the county health officer has been named registrar of vital statistics for the district.

If the authorizing law were made use of throughout the state, the 1554 primary city, town, and village registra-

tion districts could be materially reduced to 57 primary districts with a few subcenters in the more densely populated counties.

1958 Blakeslee Heart Awards

The producers of two television programs and two individual writers have won 1958 Blakeslee Awards of the American Heart Association. "Stroke," one in the series done for "Medical Horizons" over the ABC-TV network, was one winner. Sponsored by CIBA Pharmaceutical Products and broadcast from the General Rose Memorial Hospital in Denver, the live show dramatized how early rehabilitation can help stroke victims. CIBA turned over the $500 honorarium that is a part of the award to the General Rose Memorial Hospital.

"Hemo the Magnificant," the story of the human circulatory system in the Bell System Science Series over CBS-TV, won the other television award. Eugene Taylor, for his series of articles in the New York Times on cerebral vascular diseases, and Lee Geist for "Must Cardiacs Go on the Shelf?" were the individual winners. The latter, published in "Business Week," was described as "an authoritative and realistic appraisal of the cardiac patient's ability to live and work as a productive member of society."

Kellogg Biological Station

The W. K. Kellogg Foundation has made a grant of more than half a million dollars to the Michigan State University. This grant will enable the construction of facilities at the Kellogg Gull Lake Biological Station to expand its biological research. To be constructed are research laboratories for parasitology, biological science education, entomology, botany, zoology, fisheries and wild life, as well as teaching laboratories and housing units.

The Gull Lake Station is located on the former W. K. Kellogg estate. It is reported that "The diversity of the environments is greater than that to be found in many regions because of the glacial terrain which gives marked topographic variation and a variety of soils as well as many lakes and bogs. Add to this the nearby sand dunes of Lake Michigan, the Kellogg Forest, the Allegan State Forest, and the Kellogg Bird Sanctuary, and the Station becomes hard to excell as a center for ecological teaching."

Group and Magazine of the Aging

"Modern Maturity" began publication as a bimonthly in October, 1958. It is the magazine of the newly founded American Association of Retired Persons (65 or over). The purpose of the magazine is stated to be "to make retirement easier, healthier, and more rewarding." Other services provided by AARP are the privilege of group hospital and surgical benefits insurance arranged through a commercial insurance company. The association also conducts a travel service for retired persons. Other services contemplated are research and counseling.

Modern Maturity is included in the $2 membership dues of the Association. 310 E. Grand Avenue, Ojai, Calif.

40 Million Copies in 45 Years

At a special ceremony in the White House on October 16, President Eisenhower presented the 40 millionth copy of "Infant Care" to a representative American father and mother, Mr. and Mrs. Jerry E. Levelsmier of Carbondale, Ill., and their two children. They were accompanied to the White House by the chief of the Children's Bureau, Mrs. Katherine B. Oettinger, and Elliot L. Richardson, assistant secretary of health, education, and welfare.

"Infant Care" was first produced by the Children's Bureau in 1914, one of a series of guides covering the period from the prenatal stage to adolescence. The 10 editions of "Infant Care" represent a thumbnail history of child care practices, many of which have changed radically in the 45 year life of the pamphlet. With each new edition more information on the psychological problems and needs of infancy has been added. The influence of the pamphlet has gone beyond the borders of this country having been translated into Spanish and other languages.

Medical School for Arizona

The Arizona Board of Regents has committed itself to hire qualified experts to study the question of establishing a medical school in the state. The State Medical Society has agreed to support the establishment of such a school and has voted $1,000 to aid in the preliminary study.

Arizona is one of ten states in the country and one of the seven western states cooperating in the Western Interstate Commission on Higher Education without a medical school.

Epidemiology in Mental Disease

Problems in field studies in mental disorders will engage a group in an international work conference, February 16-19, 1959, at the Park Sheraton Hotel, New York City. Definitions, assumptions, technics of data collection, and analysis used in working with problems related to incidence, prevalence, and outcome of mental disorders will be discussed.

The conference is supported by the National Institute of Mental Health and sponsored by the American Psychopathological Association. The two-day annual meeting of the latter group will be held immediately following the conference and will be devoted to the epidemiology of mental disorders. Fifteen each of American and foreign participants have been invited to the conference. It has been suggested that some of the latter might be available for lectures to laboratories, clinics, and research organizations. Among them are: Professors Jan Boek and Erik Essen-Moeller of Sweden; Dr. E. E. Krapf of Switzerland; Aubrey Lewis, E. Stengel and Dr. Donald D. Reid of England; Professors J. E. Meyer of Germany, Odegaard of Norway, Pierre Pichot of France, H. C. Rümke of Holland, and Erik Stromgren of Denmark. Further information on the conference or the availability of the foreign lecturers from Dr. Joseph Zubin, American Psychopathological Association, 722 West 168th, New York 32, N. Y.

Air Pollution Instruction Expands

A course plan in air pollution at the graduate level is now available in the Department of Sanitary Engineering, University of North Carolina School of Public Health. This is incorporated into curriculums leading to three master's degrees: master of science in sanitary engineering, master of science in public health, and master of public health. For those who demonstrate capability it is part of a plan for advanced study leading to the doctor of philosophy.

The three new courses, "Fundamentals of Air Hygiene," "Effects and Measurements of Air Pollution," and "Control of Air Pollution," are under the direction of Dr. Lyman A. Ripperton. These may be combined with courses in occupational health and industrial hygiene to prepare for professional development in those phases of environmental health. Laboratory facilities and equipment for student work and individual research have been greatly increased.

This program is made possible through a Community Air Pollution

Training Grant to the university by the Public Health Service. Graduate assistantships, traineeships, and staff positions are available for qualified persons. Further information from Professor Emil T. Chanlett, Department of Sanitary Engineering, School of Public Health, University of North Carolina, Chapel Hill.

Industrial Beta-Ray Sources

"Safe Design and Use of Industrial Beta-Ray Sources," Handbook No. 66, has been published as a guide for the safe design, installation, maintenance, and disposal of beta-ray sealed sources for industrial applications. The handbook is the report of the Subcommittee on Sealed Beta-Ray Sources of the ASA Sectional Committee Z54, National Bureau of Standards. This committee formulates safety codes applicable to industrial radiation protection problems and is based upon the standards for maximum permissible exposure to ionizing radiation which is prepared by the National Committee on Radiation Protection and Measurements and by the International Commission on Radiological Protection. Merrill Eisenbud of the Medical Division, Atomic Energy Commission, is the American Public Health Association's representative on Sectional Committee Z54. Gov. Ptg. Office, Washington 25; 20 cents.

Public Health on Voice of America

"On the Health Front" is the title of a radio broadcast series sponsored by the Kings County (Brooklyn, N. Y.) Medical Society. Immediately following the first broadcast of the 1958-1959 series in October on the subject "You and Your Nerves," the State Department notified the society that this program had been selected for the Voice of America to be broadcast around the world. Thus, what started with an audience of 200-300, now has an audience of 50,000 on station WEVD and a world audience of uncounted thousands.

A First in Connecticut

The Stamford Health Center, which is reported to be the first building in Connecticut "to be devoted exclusively to a full-time health department," was recently dedicated with an open house. The director of health, James J. Costanzo, M.D., in inviting the public to view the new home, encouraged greater understanding and use of the department's services. The one-story brick building in addition to offices has a well equipped laboratory, clinic rooms for well child conferences and venereal disease control, and an air-conditioned auditorium for health conferences and public health education meetings.

A Century of Squibbs

In 1958 E. R. Squibb and Sons completed its first century as a pharmaceutical manufacturer. It celebrated in part by reminding the world of its founder, Edward Robinson Squibb, M.D., and his contributions to medicine. Dr. Squibb, as an assistant surgeon in the Navy during the Mexican War, labored vigorously for a pure drug program. Leaving the Navy in 1857, the Army asked him to set up his own laboratory to produce the vast supplies of reliable drugs that would be needed in case of war. His little four-story laboratory on the Brooklyn waterfront later met many of the medical needs of the armies during the Civil War. In 1860 he was instrumental in revising the United States Pharmacopeia; he proposed a pure food and drug act that served as a model for future legislation; he collaborated ardently with the American Medical Association in the campaign to control fraudulent patent medicine advertising; and he developed a technic for making a uniformly effective ether.

The present-day Squibb believes that his "heritage of fidelity to quality not only set the standards for his company's policies through the years but for the entire pharmaceutical industry as well."

By way of summarizing the complex of activities growing out of Dr. Squibb's inspiration, Squibb has prepared a list of 61 "firsts" in pharmacy among the accomplishments during the 100 years of the firm's life. (This might be available from Squibb, 745 Fifth Ave., New York 22 and might serve as a science teaching aid.)

Timely in relation to this "century" celebration is the 1958 Atkins Award to Squibb "in recognition of outstanding cooperation with and service to the science teachers of New Jersey." This award of the New Jersey Science Teachers Association recognized Squibb's "continuing program of service to science education," particularly through its Institute of Medical Research in Summit, N. J. Here, high school science teachers are given summer jobs and scientific personnel is made available for lectures in high schools.

Snow Award to Herbert H. Lehman

The Honorable Herbert H. Lehman received the 1958 William Freeman Snow Award for Distinguished Service to Humanity of the American Social Hygiene Association at a luncheon given in his honor in New York City, November 10. Principal speaker for the event was His Excellency General Carlos P. Romulo, Filipino ambassador to the United States.

The citation reads in part:

> His is the ancient heritage of active personal concern for the suffering and needy; of rebuilding decent, self-sustaining national and familial life on the rubble of old devastations. It is especially the heritage that recognizes what Chesterton called The Everlasting Man —man, infinitely worthwhile because of his origin and destiny; man, responsible for himself and his fellow human beings.

The award was established in 1937 on the occasion of 40 years of distinguished service to health, welfare, and education by Dr. Snow who was the first executive director of the American Social Hygiene Association.

PERSONALS

ELMER M. BINGHAM, M.D.,* former director, San Joaquin Local Health District, is now chief, Division of Preventive Medicine, San Diego City–County Health Department.

ROBERT A. BURCAW, former regional director, National Foundation for Infantile Paralysis, is now national field director, National Multiple Sclerosis Society.

WILLIAM H. CLARK, M.D., M.P.H.,† former chief, Bureau of Adult Health, has been appointed assistant chief, Division of Preventive Medical Services, California State Health Department, succeeding FREDERIC M. KRIETE, M.D.,* now deputy state health director.

L. ANN CONLEY, R.N., M.P.H.,* former assistant director, Visiting Nurse Association, Detroit, has been appointed professor of nursing and director, Simmons College School of Nursing, Boston, Mass.

DOROTHY BIRD DALY, former associate field service director, American Social Hygiene Association, has been appointed training consultant, Bureau of Child Welfare, New York City Welfare Department.

BURNET M. DAVIS, M.D.,* former program officer, Bureau of State Services, has been appointed deputy chief, Division of Hospital and Medical Facilities, Public Health Service, Washington, D. C.

PAUL L. DAY, Ph.D., professor and head, Department of Biochemistry, University of Arkansas School of Medicine, and assistant dean of the Graduate School, has been appointed to the new position of scientific director, U.S. Food and Drug Administration.

HORACE DELIEN, M.D.,* former health program director, International Cooperation Administration in the Philippines, is now chief, Public Health Service Division of International Health, Washington, D. C.

WESLEY J. DUIKER, M.Ed., former psychologist, Department of Public Instruction, Division of Special Education, is now director, Division of Health Education, South Dakota State Health Department.

GAROLD L. FABER, M.D., M.P.H.,* former

* Fellow.
† Member.

health officer, Butte County, is now health officer, Fresno County, Calif.

THOMAS B. FITZPATRICK, M.S.,* former administrator, Citizens General Hospital, New Kensington, Pa., has been appointed research associate, Study of Hospital and Medical Economics, University of Michigan, Ann Arbor.

GUSTAVE FREEMAN, M.D., former head, Clinical Pharmacology and Therapeutics Section, Cancer Chemotherapy National Service Center, Bethesda, Md., is now program director of medical research, Biological Sciences Department, Stanford Research Institute, Menlo Park, Calif.

LEON L. GARDNER, M.D., M.P.H.,† former chief, Division of Preventive Medicine, has succeeded BERTRAM E. MARKS, M.D., M.P.H.,† as chief, Bureau of Acute Communicable Disease Control, San Diego (Calif.) City–County Health Department.

EVALYN S. GENDEL, M.D., formerly in charge of the state-wide polio vaccination program, has been appointed assistant director, Maternal and Child Health Division, Kansas State Health Department, with special responsibility for supervision of the school health program.

WILLIAM M. GROTON, M.D., M.P.H., former director, Out-Patient Department, Lemuel Shattuck Hospital, and most recently at the Harvard School of Public Health working for an M.P.H. degree, has become assistant director, Division of Local Health Services, Massachusetts State Department of Health.

WILLIAM McD. HAMMON, M.D.,* head, Department of Epidemiology and Microbiology, University of Pittsburgh Graduate School of Public Health, is on leave in Thailand, at the request of the Thai government, as consultant on an epidemic of an unidentified fever disease.

FRANCES HOOKER, formerly employed by the Alabama State Department of Health Laboratories, Montgomery, Ala., is now junior bacteriologist, Division of Laboratories, South Dakota State Health Department.

G. HALSEY HUNT, M.D.,* former chief, Public Health Service's Hospital Division, and more recently director, Center for Aging Research, Bethesda, Md., has been appointed chief, Division of General Medical Sciences.

H. VAN ZILE HYDE, M.D.,* chief, Public Health Service Division of International Health, for the past five years, has been appointed assistant to the Surgeon General for international health.

ROBERT INMAN, D.D.S., a recent graduate of the University of Tennessee Dental School, Memphis, is now with the Division of Preventive Dentistry, to serve the city–county health units at Shawnee and Ada, Oklahoma State Health Department.

WILLIAM D. JOHNSON, B.A., has succeeded LEE AASE as director, Division of Public Health Statistics, South Dakota State Health Department.

MARGARET K. JONES, former nutrition consultant, Connecticut State Department of Health, has resigned to become assistant director for nutrition services, Connecticut Dairy and Food Council.

EMIL G. KLARMANN, Sc.D.,† vice-president in charge of technical services, Lehn and Fink, Inc., in New York on December 10th, received the 1958 Achievement Award of the Chemical Specialties Manufacturers Association for his work in the fields of disinfection and sanitation which has stimulated significant progress in these industries.

DAVID KLEIN, former executive editor and vice-president, Basic Books, and executive vice-president, Dryden Press, has been appointed director of publications, Association for the Aid of Crippled Children, New York City.

ORAL LEE KLINE, Ph.D., former director of research, Division of Nutrition, U. S. Food and Drug Administration, has succeeded FRANK A. VORHES, JR., retired, as director, Division of Food.

OSCAR KURREN,* former executive director, Harmarville Rehabilitation Center, Pittsburgh, Pa., has been appointed consultant on rehabilitation centers, National Society for Crippled Children and Adults, Chicago, Ill.

WALLACE LANE, M.D.,† formerly in a similar position in the Seattle–King County Health Department, is now chief, Division of Chronic Disease and Adult Health, Washington State Health Department, Seattle, succeeding J. L. JONES, M.D.,* who is developing the program of the Chronic Disease Section of the division.

JAMES H. LEVAN, C.E.,† former assistant chief, Health Research Facilities Branch, Division of Research Grants, National Institutes of Health, is now chief sanitary engineer officer, U. S. Coast Guard, Washington, D. C.

H. HOUSTON MERRITT, M.D., director, Neurology Service, has been appointed also acting dean of the Faculty of Medicine, Columbia University, and acting vice-president in charge of medical affairs.

ROSALYN M. MERVIS, M.P.H.,* formerly health educator, Allegheny (Pa.) County Health Department, is now director of health education, Tuberculosis League of Pittsburgh.

LOUIS P. MUNAN,† former associate in physiology, George Washington University School of Medicine, has been with the Uni-

versity of San Marcos Medical School in Lima, the School of Medicine, Central University in Quito, and with the School of Medical Sciences in Guayaquil on a Fulbright lectureship award in biostatistics.

HIRAM W. NICKERSON, M.P.H.† formerly executive secretary, Bangor (Me.) Tuberculosis and Health Association, is now director of publications, American Cancer Society, Massachusetts Division.

DOROTHEA E. NICOLL, former technical assistant, Indonesia Ministry of Health, and later assistant, Department of Social Welfare and Community Development of Ghana, West Africa, has returned to her post as head of the Nutrition Section, Massachusetts State Department of Health.

JOSEPH PALOMBA, M.P.H., formerly in the Denver City–County Health Department, is now industrial hygienist, Occupational Health Section, Colorado Department of Public Health.

RICHARD A. PRINDLE, M.D., M.P.H.,* already with the program, has been appointed chief, Air Pollution Medical Program, Public Health Service, succeeding WILTON M. FISHER, M.D.,* who becomes chief, Training Branch, Service's Division of Personnel.

SAMUEL I. REED, former training coordinator, has been appointed head, Environmental Health Section, Washington State Department of Health, succeeding ROGER JAMES,† who becomes supervising public health engineer, Eastern Region, with headquarters in Spokane.

HUGH B. ROBINS, M.D.,* former health director, Calhoun County, Mich., has been appointed professor of public health practice, University of Michigan School of Public Health, Ann Arbor, to direct the newly organized research and training service.

MARGARET L. SHETLAND, Ed.D.,* former chief nursing adviser, Health Division, U. S. Operations Mission to the Philippines, International Cooperation Administration, has succeeded M. OLWEN DAVIES, retired, on the staff of the Department of Baccalaureate and Higher Degree Programs, National League for Nursing.

PAUL W. SCHUSTER, M.S.P.H.,* former executive director, Region VIII, Illinois Heart Association, has resigned to become executive director, United Community Council of Champaign County (Ill.), and assistant professor of public health and hygiene, Urbana Campus, University of Illinois, while DOROTHY F. DUNN* is on educational leave from the latter job.

LAWRENCE W. SLANETZ, Ph.D.,* chairman, Department of Bacteriology, University of New Hampshire, is serving as a member of the Sanitary Engineering and Occupational Health Study Section, National Institutes of Health.

STANLEY SMITH, former sanitary engineer, Public Health District No. V, has succeeded CARL F. HODGKINSON, former chief, Section of Water Pollution Control, Kansas State Health Department.

VIRGINIA F. STOKDYK,† former senior therapeutic dietition, University of California Hospital, has been appointed nutrition consultant, Connecticut State Department of Health.

PRESTON VALIEN, Ph.D., former professor and chairman, Department of Social Sciences, Fisk University, is now associate director, Driver Research Center, New York State Health Department and State Motor Vehicle Bureau.

MURIEL M. YOUNG, R.N., M.P.H.,* former mental health nursing consultant, Oregon State Board of Health, has been appointed director of nursing, Oregon State Hospital, Salem.

DEATHS

ELLIS M. DEVITT, M.D.,† health officer, Old Lyme, Conn., on November 4 (Health Officers Section).

CHARLES TURNER FOULK, 2ND,† health officer, Englewood (N. J.) Health Department on November 1 (Health Officers Section).

JOHN F. HACKLER, M.D.,* director, Muskogee (Okla.) City County Health Department on September 10, 1958 (Health Officers Section).

DONALD H. MILLER, D.D.S.,† of Elmira, N. Y., on June 7, 1958 (Dental Health Section).

EVERETT W. PROBST, M.D.,* of Rockaway, N. J. (Occupational Health Section).

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MICHAEL J. TAKOS, M.D., M.P.H.,† director, Research and Special Projects, Dade County Health Department, Miami, Fla., on September 9, 1958 (Epidemiology Section).

ANNA B. TOWSE,* instructor, Department of Health, State Teachers' College, Cortland, N. Y. (Public Health Education Section).

HARRY W. VON LOESECKE,* technical adviser, Bureau of Agricultural and Industrial Chemistry, U. S. Department of Agriculture, Washington, D. C. (Food and Nutrition Section).

CONFERENCES AND DATES

State and Regional Public Health Meetings—January, February, and March, 1959:

Alabama Public Health Association. Thomas Jefferson Hotel, Birmingham. March 19–20.

Massachusetts Public Health Association. Massachusetts Institute of Technology, Cambridge. January 29.

Oklahoma Public Health Association. Oklahoma State University, Stillwater. March 4–6.

Puerto Rico Public Health Association. Hotel La Concha, San Juan, P. R. February 3–7.

Meetings of Other Organizations:

American Academy of Occupational Medicine. Sheraton Plaza Hotel, Boston, Mass. February 11–13.

American Orthopsychiatric Association. San Francisco, Calif. March 30–April 1.

Child Study Association of America. New York, N. Y. March 16.

Family Service Association of America. Washington, D. C. March 31–April 3.

International Conference on Epidemiology in Mental Disease. Park Sheraton Hotel, New York, N. Y. February 16–19.

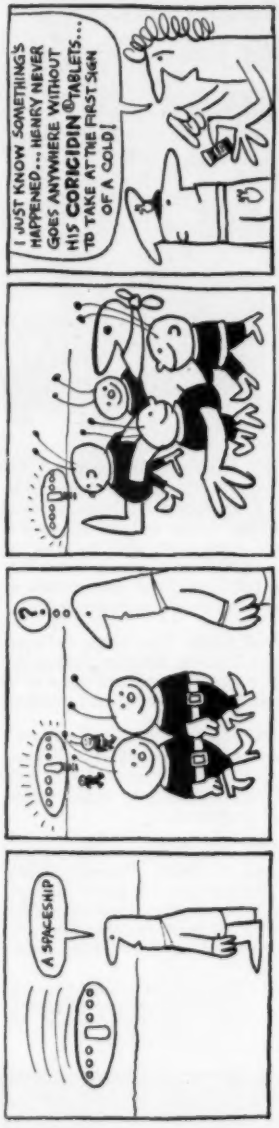
National Advisory Committee on Local Health Departments, Annual Meeting. Palmer House, Chicago, Ill. March 16.

National Health Forum, National Health Council, Palmer House, Chicago, Ill. March 17–19.

National Society for the Prevention of Blindness. Statler Hotel, New York, N. Y. February 25–27.

Northeastern Weed Control Conference. Hotel New Yorker, New York, N. Y. January 7–9.

United States–Mexico Border Health Association. Brownsville, Tex. March 30–April 3.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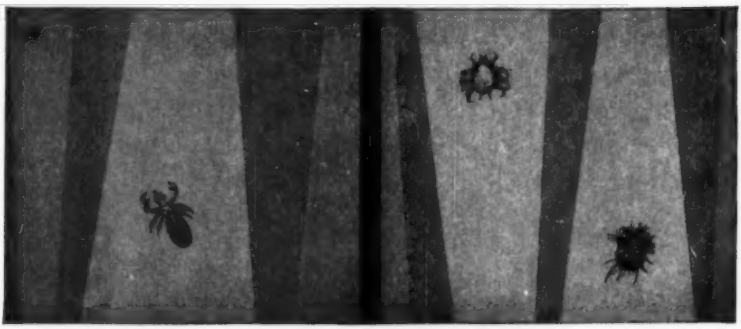

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IN 4 MINUTES

"A single shampooing sufficed to eradicate infestation . . . in all cases...in a few minutes." ■

Gardner, J.: J. Pediat. 52:448 (Apr.) 1958.

SUPPLIED: KWELL Shampoo: bottles of 2 & 16 fl. oz.

cream & lotion

IN SCABIES,
CHIGGERS AND
PEDICULOSIS

95% to 100% effective in 1 treatment — acts fast — non-irritating — nonstaining. ■

SUPPLIED: KWELL Cream: jars of 2 oz. & 1 lb. — KWELL Lotion: bottles of 2 & 16 fl. oz.

REED & CARNRICK / Jersey City 6, New Jersey

DIFCO LABORATORY PRODUCTS

BIOLOGICS CULTURE MEDIA REAGENTS

Media for Standard Methods

Culture Media *Dehydrated and Prepared*

Microbiological Assay Media

Tissue Culture and Virus Media

Bacterial Antisera and Antigens

Diagnostic and Serological Reagents

Sensitivity Disks Unidisks

Peptones Hydrolysates Amino Acids

Enzymes Enrichments Dyes Indicators

Carbohydrates Biochemicals

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over 60 years' experience

in the preparation of Difco products assures

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